# KB11-A
# central processor unit
# engineering drawings

digital equipment corporation · maynard. massachusetts

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

# DRAWING DIRECTORY

## CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

| SEQUENCE | | |
|---|---|---|
| DRAWING DIRECTORY | B-DD-KB11-Ø | (SHEET ONE ONLY) |
| MODULE UTILIZATION | E-MU-KB11-A-1 | |
| BLOCK DIAGRAM | D-BD-KB11-A-Ø2 | |
| KB11-A FLOW DIAGRAMS | D-FD-KB11-A-Ø3 | |
| DATA PATHS (DAP) | E-CS-M81ØØ-Ø-1 | |
| GENERAL REGS & ALU CNTL(GRA) | E-CS-M81Ø1-Ø-1 | |
| IR DECODE & COND CODES(IRC) | E-CS-M81Ø2-Ø-1 | |
| PROC DATA & UNIBUS REG(PDR) | E-CS-M81Ø4-Ø-1 | |
| ROM & ROM CONTROL(RAC) | E-CS-M81Ø3-Ø-1 | |
| SYSTEM JUMPER BOARD(SJB) | E-CS-M8116-Ø-1 | |
| TIMING GENERATOR(TIG) | E-CS-M81Ø9-Ø-1 | |
| TRAP & MISC CNTL(TMC) | E-CS-M81Ø5-Ø-1 | |
| UNIBUS & CONSOLE CNTL (UBC) | E-CS-M81Ø6-Ø-1 | |
| BUS CABLES & GRANT CHAIN | D-IC-KB11-A-BG | |
| CIRCUIT SCHEMATIC | C-CS-M93Ø-Ø-1 | |
| CIRCUIT SCHEMATIC | C-CS-M92Ø-Ø-1 | |
| CIRCUIT SCHEMATIC | E-CS-5409910-0-1 | |
| CIRCUIT SCHEMATIC | E-CS-5409912-0-1 | |
| CIRCUIT SCHEMATIC(TIG) SPECIAL REVISION | E-CS-M81Ø9-0-1 | |

SEQUENCE

### UNIT VARIATIONS

| VARIATION | TITLE | PRINT SET TYPE: KB11-1 | | | | | |
|---|---|---|---|---|---|---|---|
| KB11-A | 16 BIT PROCESSOR | X | | | | | |

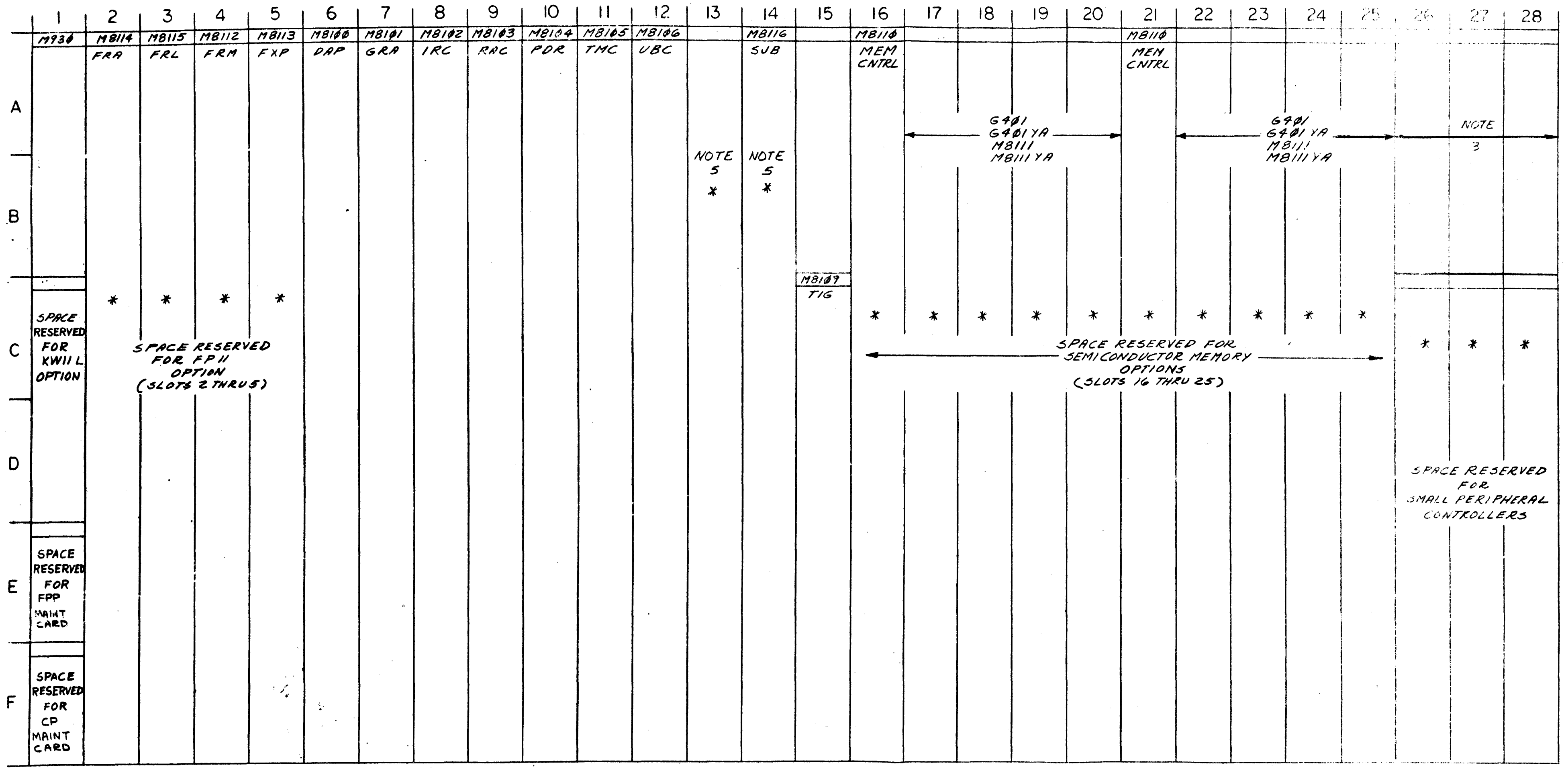
### REVISIONS

| REV | CHG. NO. | DATE |
|---|---|---|
| A | 7009871-00002 | 5/72 |
| B | 7009871-00003 | |
| C | KB11A-6 | |
| D | KB11A-7 | |
| E | KB11A-8 | |
| F | KB11A-9 | |
| H | KB11A-11 | |
| J | KB11A-12A | |
| K | KB11A-13 | |
| L | KB11A-14 | 1/73 |
| M | KB11A-15 | 3/73 |
| N | KB11A-16 | 5/73 |
| P | KB11A-17 | 5/73 |
| R | KB11A-18 | 8/73 |
| S | KB11A-19 | 12/73 |

| USED ON OPTION/MODEL | | | | |
|---|---|---|---|---|
| 11/45 | | DRN. R. COOK | DATE 3/30/72 | TITLE: 16 BIT PROCESSOR |
| | | CHK'D. R.COOK | DATE 3/30/72 | |
| | | PROJ ENG. [signature] | DATE 4/29/72 | |
| | | PROD. [signature] | DATE 5-1-72 | SIZE B / CODE DD / NUMBER KB11-Ø / REV S |
| | | FIELD SERV. [signature] | DATE 5/1/72 | |
| | | SHEET 1 OF 5 | | DIST |

DRB 106

DEC 16-(325)-1062-1--N871




✱ DESIGNATES OPTION

NOTES:

POWER TO MOS AND BIPOLAR MEMORY REMAINS ON WITH THE CONSOLE ON/OFF SWITCH IN THE OFF POSITION. THIS IS INDICATED BY THE LED ON THE MOS CONTROL BOARD.

~~IF THERE IS NO MEMORY MANAGEMENT (M8107 AND M8108) INSTALLED, THE SYSTEM JUMPER BOARD (M8116) MUST BE INSTALLED IN SLOT #4.~~

2. CAUTION MUST BE OBSERVED WHEN INSTALLING THE BOARDS INTO THE BACK PANEL SLOTS BECAUSE OF NON-STANDARD VOLTAGES PRESENT IN SLOTS Ø1, Ø2 AND 15 THRU 28.

3. IF ONLY ONE UNIBUS IS USED:
   - A. THE UNIBUS PLUGS IN SLOT #28.
   - B. PLUG AN INTERNAL BUS CONNECTOR JUMPER (M92ØØ) INTO SLOTS #26 AND #27.
   - C. PLUG A BUS TERMINATOR (M93Ø) INTO SLOT #1.

   IF TWO UNIBUSES ARE USED:
   - A. UNIBUS A PLUGS IN SLOT #26
   - B. TERMINATOR (M93Ø) FOR UNIBUS A PLUGS INTO SLOT #1
   - C. UNIBUS B PLUGS IN SLOT #27.
   - D. TERMINATOR (M93Ø) FOR UNIBUS B PLUGS INTO SLOT #28.

4. MODULES IN SLOTS 17-20 MUST BE SAME TYPE; MODULES IN SLOTS 22-25 MUST BE SAME TYPE.

5. IF KT11 OPTION IS PRESENT M8108 GOES IN SLOT 13 & M8107 GOES IN SLOT 14, IF NO KT11 M8116 GOES IN SLOT 14 & SLOT 13 IS EMPTY.

| QTY. | DESCRIPTION | PART NO | ITEM NO |
|---|---|---|---|
| ✱ | SYSTEM MAINT TOOLS | B-DD-SP45-KA | |
| ✱ | FLOATING POINT PROC. | B-DD-FP11-B | |
| ✱ | 64 WORD BOOTSTRAP | B-DD-MR11-D | |
| ✱ | INTERVAL CLOCK | A-ML-KW11-D | |
| ✱ | BIPOLAR MEMORY | B-DD-MS11-C | |
| ✱ | MOS MEMORY | B-DD-MS11-B | |
| ✱ | MEM. MANAGEMENT UNIT | B-DD-KT11-C | |
| 1 | INT. BUS CONN ASSY | M9200 | |
| 2 | BUS TERMINATOR | M93Ø | |
| 1 | SYSTEM JUMPER BD | M8116 | |
| 1 | TIMING GENERATOR | M81Ø9 | |
| 1 | UNIBUS & CONSOLE CNTL | M81Ø6 | |
| 1 | TRAP & MISC. CONTROL | M81Ø5 | |
| 1 | PROC. DATA & UNIBUS REG | M81Ø4 | |
| 1 | ROM & ROM CONTROL | M81Ø3 | |
| 1 | IR DECOD & COND. CODES | M81Ø2 | |
| 1 | GENERAL REGS & ALU CNTL | M81Ø1 | |
| 1 | DATA PATHS | M81ØØ | |

PARTS LIST

USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS | ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP EDGES, SURFACE QUALITY ✓

MATERIAL

DRN. | DATE
CHK'D | DATE
ENG. | DATE
PROJ. ENG. | DATE
PROD. | DATE

NEXT HIGHER ASSY.: E-UA-KB11-Ø

SCALE

SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: MODULE UTILIZATION

SIZE: E | CODE: MU | NUMBER: KB11-A-Ø1 | REV: A

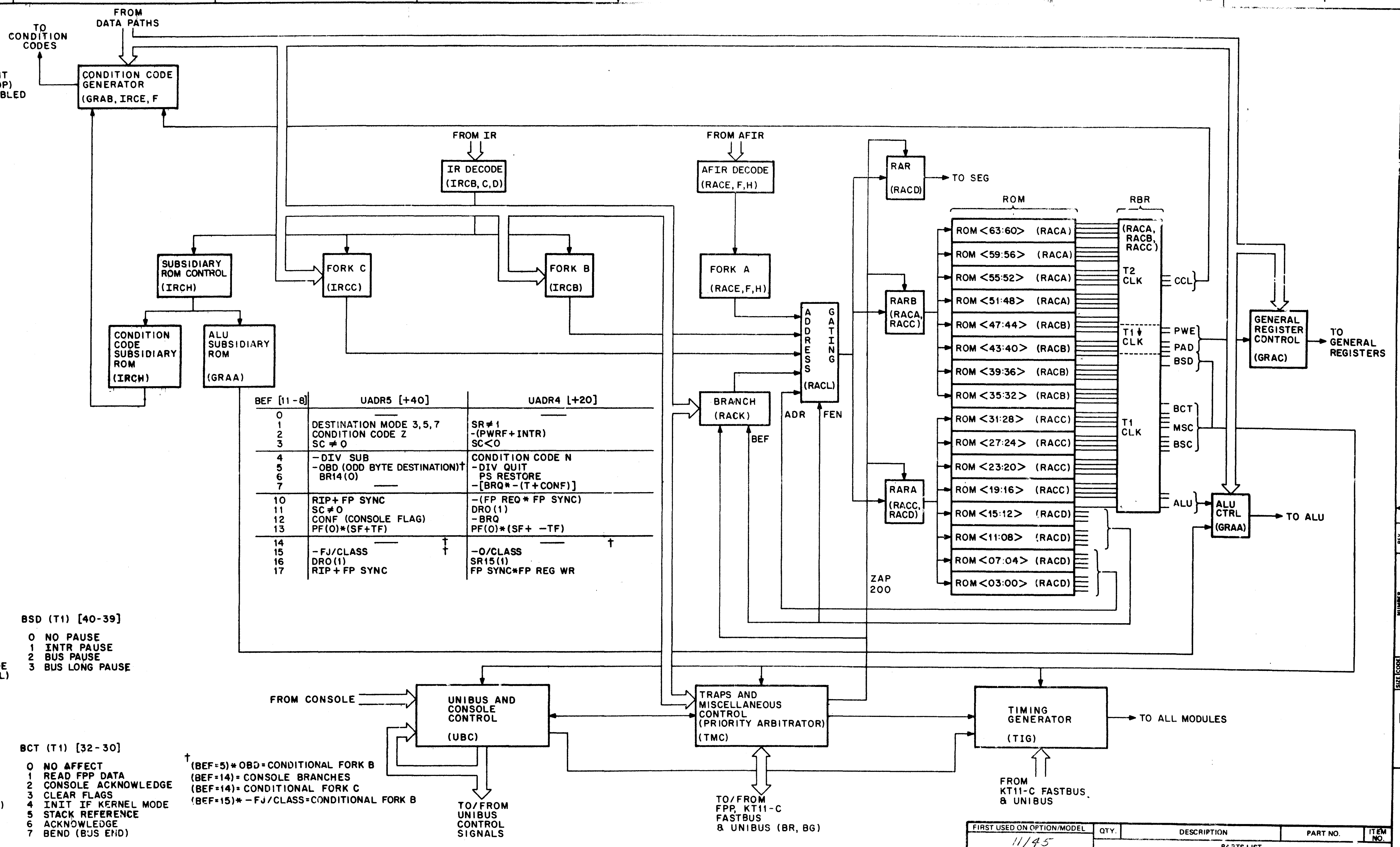
DIST

E MU KB11-A-Ø1 REV. A

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission

CCL (T2) [54-52]

0 NO CHANGE
1 INSTRUCTION DEPENDENT
2 SET/CLR FROM IR (CCOP)
3 LOAD FROM FPP IF ENABLED
4 CCLD4
5 CCLD5
6 CCLD6
7 CCLD7




| BEF [11-8] | UADR5 [+40] | UADR4 [+20] |
|---|---|---|
| 0 | —— | —— |
| 1 | DESTINATION MODE 3,5,7 | SR≠1 |
| 2 | CONDITION CODE Z | -(PWRF+INTR) |
| 3 | SC≠O | SC<O |
| 4 | -DIV SUB | CONDITION CODE N |
| 5 | -OBD (ODD BYTE DESTINATION)† | -DIV QUIT |
| 6 | BR14(O) | PS RESTORE |
| 7 | —— | -[BRQ*-(T+CONF)] |
| 10 | RIP+FP SYNC | -(FP REQ*FP SYNC) |
| 11 | SC≠O | DRO(1) |
| 12 | CONF (CONSOLE FLAG) | -BRQ |
| 13 | PF(O)*(SF+TF) | PF(O)*(SF+ -TF) |
| 14 | —— † | —— † |
| 15 | -FJ/CLASS † | -O/CLASS |
| 16 | DRO(1) | SR15(1) |
| 17 | RIP+FP SYNC | FP SYNC*FP REG WR |

† (BEF=5)*OBD=CONDITIONAL FORK B
(BEF=14)=CONSOLE BRANCHES
(BEF=14)=CONDITIONAL FORK C
(BEF=15)*-FJ/CLASS=CONDITIONAL FORK B

FEN [14-12]

FEN 14 ENABLE FORK C
FEN 13 ENABLE FORK B
FEN 12 ENABLE FORK A

ADR [07-00]

TO ADDRESS GATING

MSC (T1) [29-27]

0 NO AFFECT
1 ENA FP ATTN
2 NOT USED
3 SET CONF IF KERNEL MODE
4 SPL (SET PRIORITY LEVEL)
5 CONDITIONAL BUST
6 BRQ STROBE
7 BUST (BUS START)

BSD (T1) [40-39]

0 NO PAUSE
1 INTR PAUSE
2 BUS PAUSE
3 BUS LONG PAUSE

BSC (T1) [26-24]

0 DATI
1 SRC1 DATI
2 KERNEL DATI
3 SRC2 DATI
4 FC (CONTROLLED BY FPP)
5 DATO
6 BSOP1
7 BSOP2

BCT (T1) [32-30]

0 NO AFFECT
1 READ FPP DATA
2 CONSOLE ACKNOWLEDGE
3 CLEAR FLAGS
4 INIT IF KERNEL MODE
5 STACK REFERENCE
6 ACKNOWLEDGE
7 BEND (BUS END)

FIRST USED ON OPTION/MODEL: 11/45
QTY. | DESCRIPTION | PART NO. | ITEM NO.
PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS: .XXX ±.005, .XX ±.02, .X ±.1
ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL
FINISH

DRN. — DATE 4/6/72
CHK'D. — DATE 4/14/72
ENG. — DATE
PROJ. ENG. — DATE
PROD. — DATE
NEXT HIGHER ASSY. E-FI KB11-B
SCALE
SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

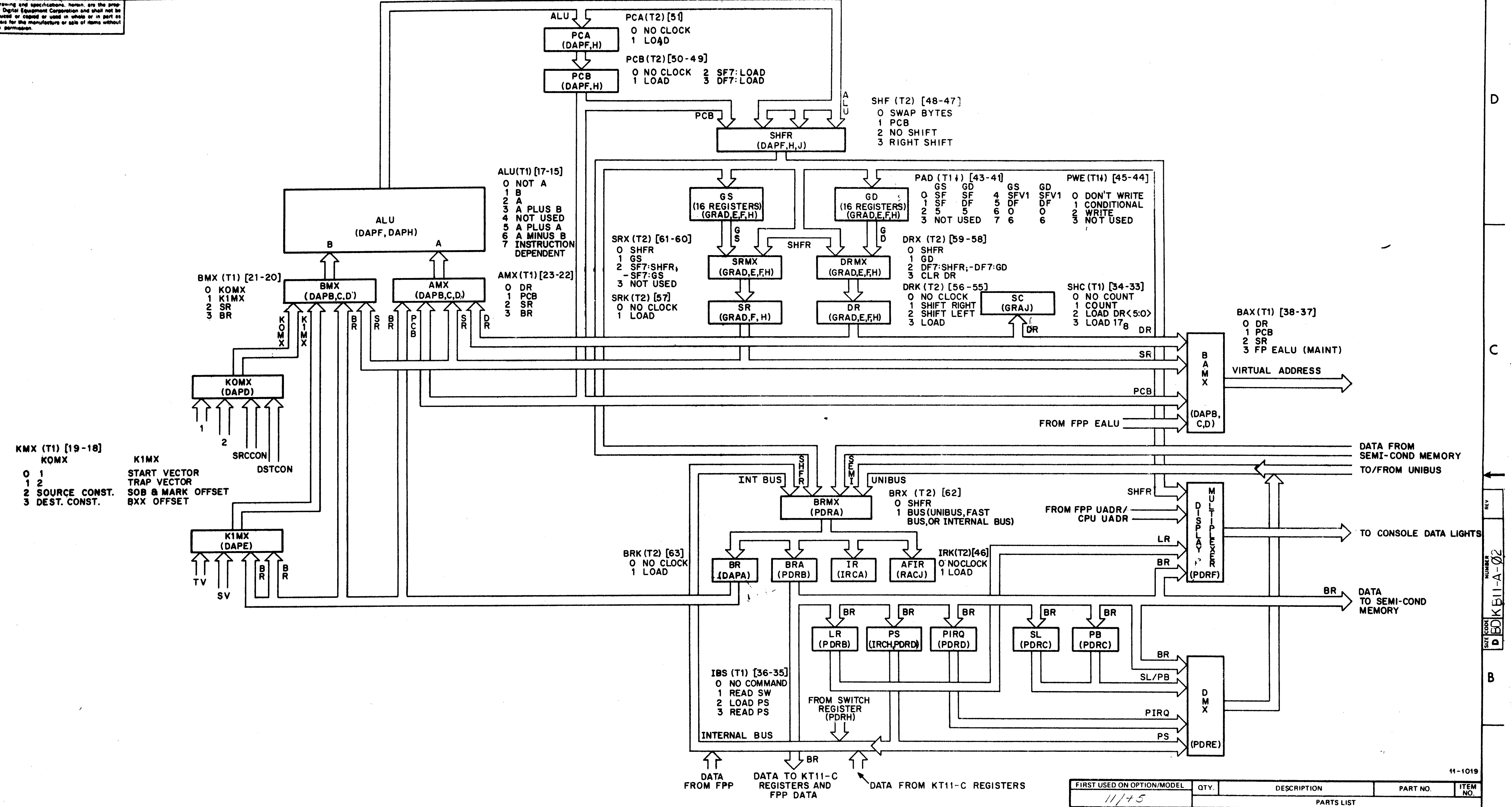
TITLE

# BLOCK DIAGRAM

SIZE D | CODE ED | NUMBER KB11-A-02 | REV
DIST

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS: XXX ± .005, XX ± .02, X ± .1 — ANGLES ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL

FINISH

DRN. — DATE; CHK'D — DATE; ENG. — DATE; PROJ. ENG. — DATE; PROD. — DATE

NEXT HIGHER ASSY.: E-CP-KB11-Ø

SCALE; SHEET 1 OF 2

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE

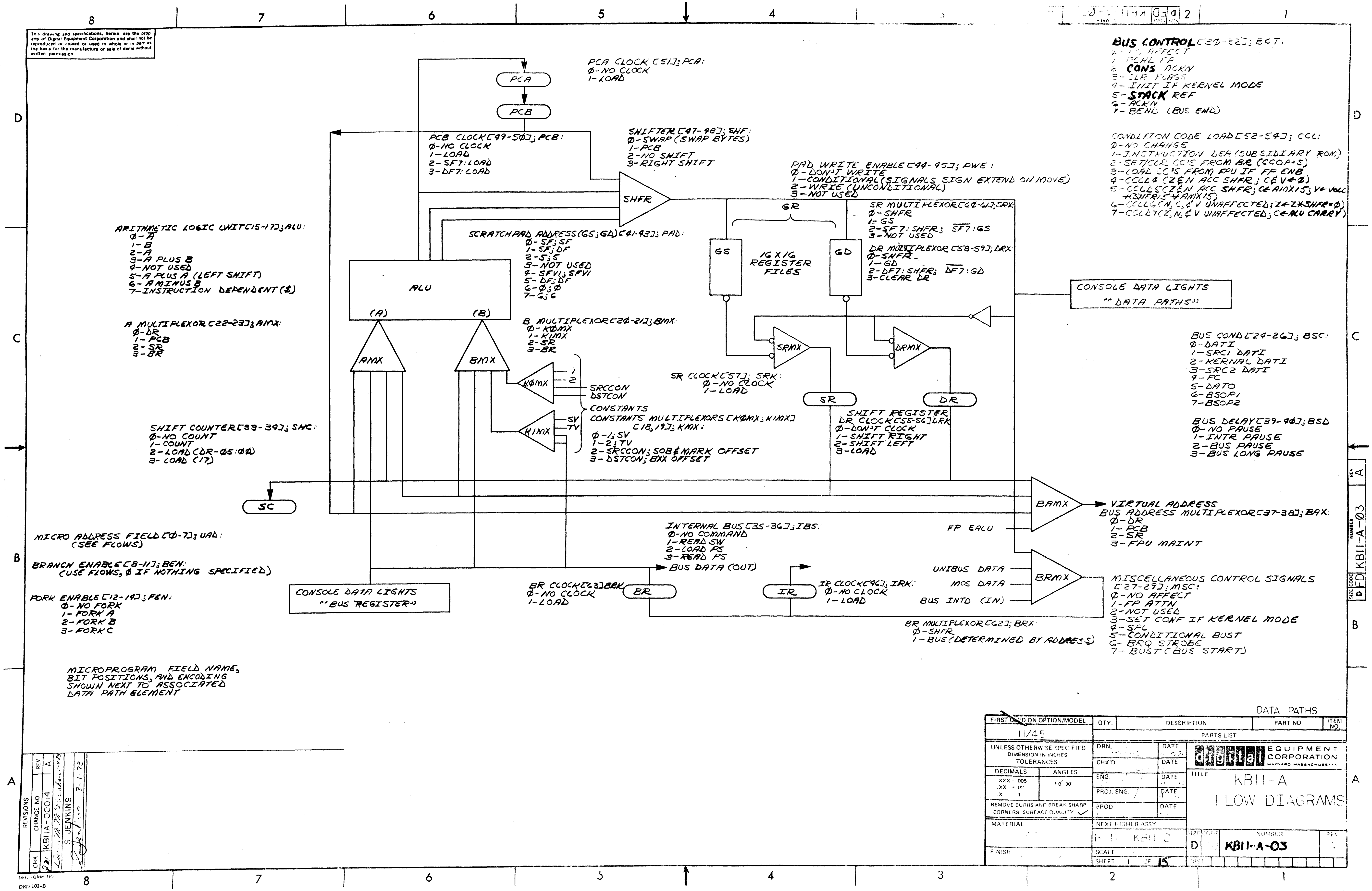
# BLOCK DIAGRAM

SIZE D CODE BQ NUMBER KB11-A-Ø2 REV.

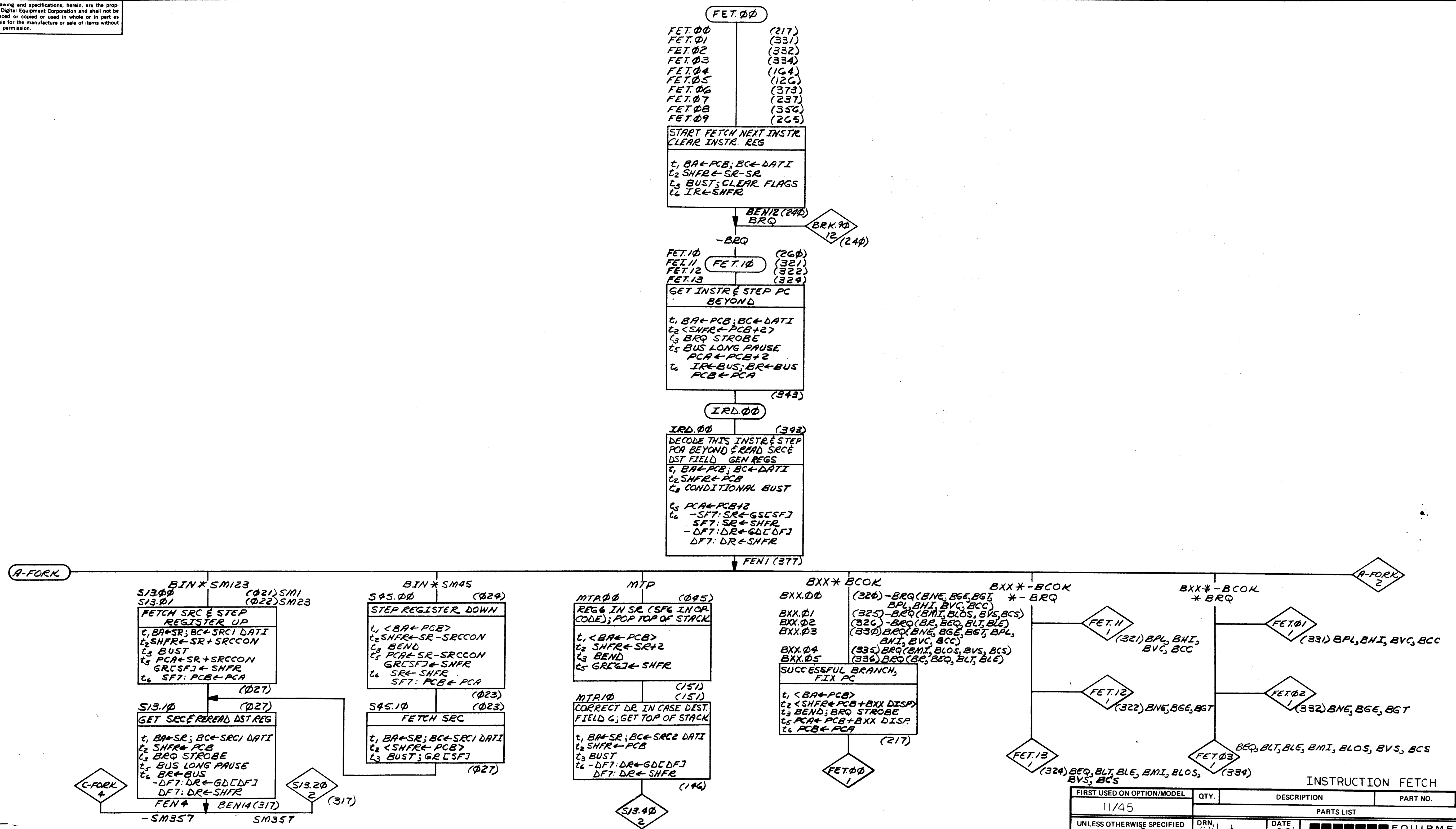
DIST.

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.



This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




INSTRUCTION FETCH

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. DATE 1-5-71
CHK'D. DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY. E-DD-KB11-Ø
SCALE
SHEET 2 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

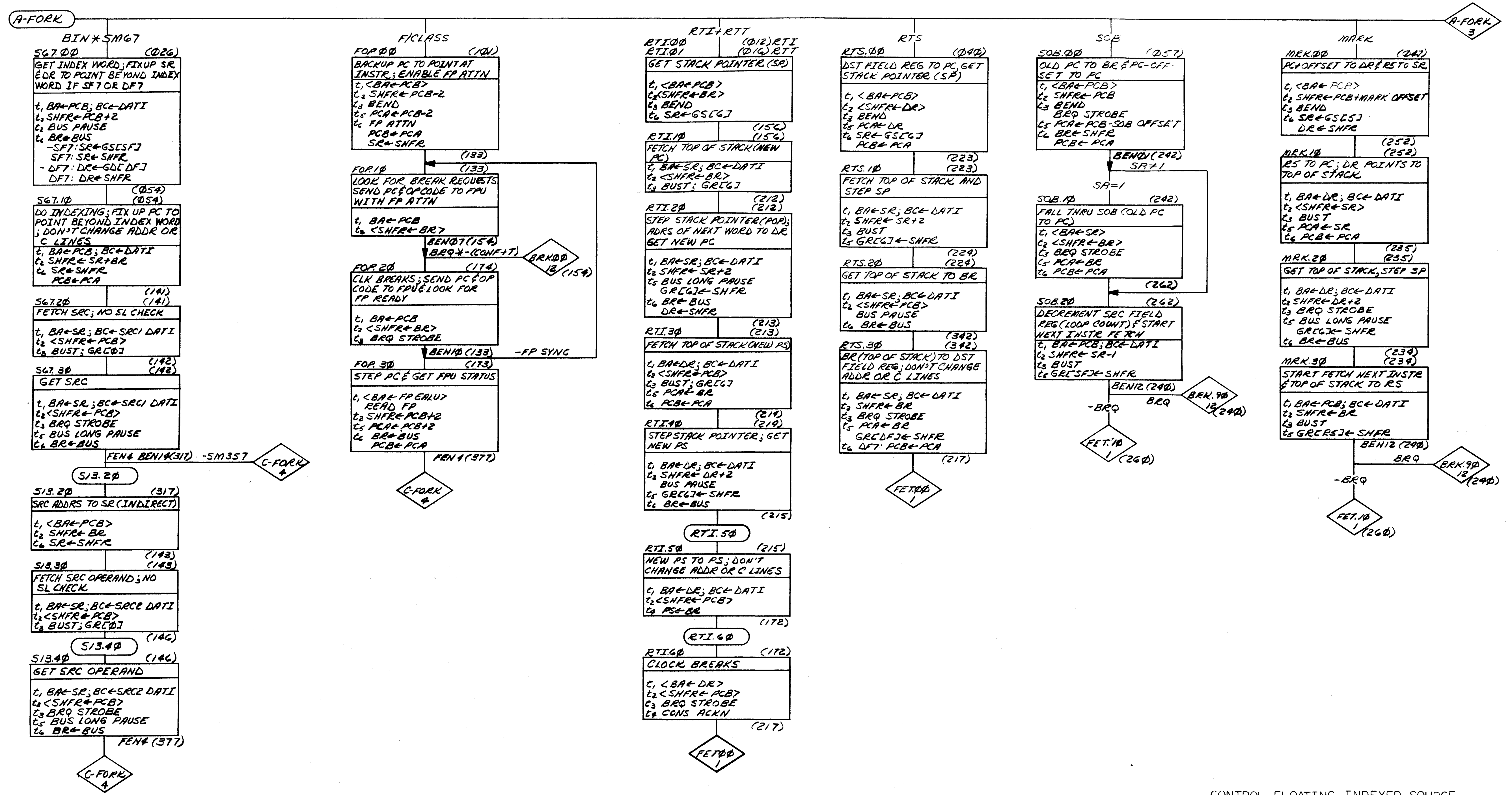
TITLE KB11-A FLOW DIAGRAMS (FLOWS 1)

SIZE D CODE FD NUMBER KB11-A-Ø3 REV. A

DIST.

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




CONTROL; FLOATING; INDEXED SOURCE

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. | DATE 3-13-72
CHK'D. | DATE
ENG. | DATE 4-3-72
PROJ. ENG. | DATE 4-3-72
PROD. | DATE 4-13-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE

SHEET 3 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 2)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | FD | KB11-A-Ø3 | A |

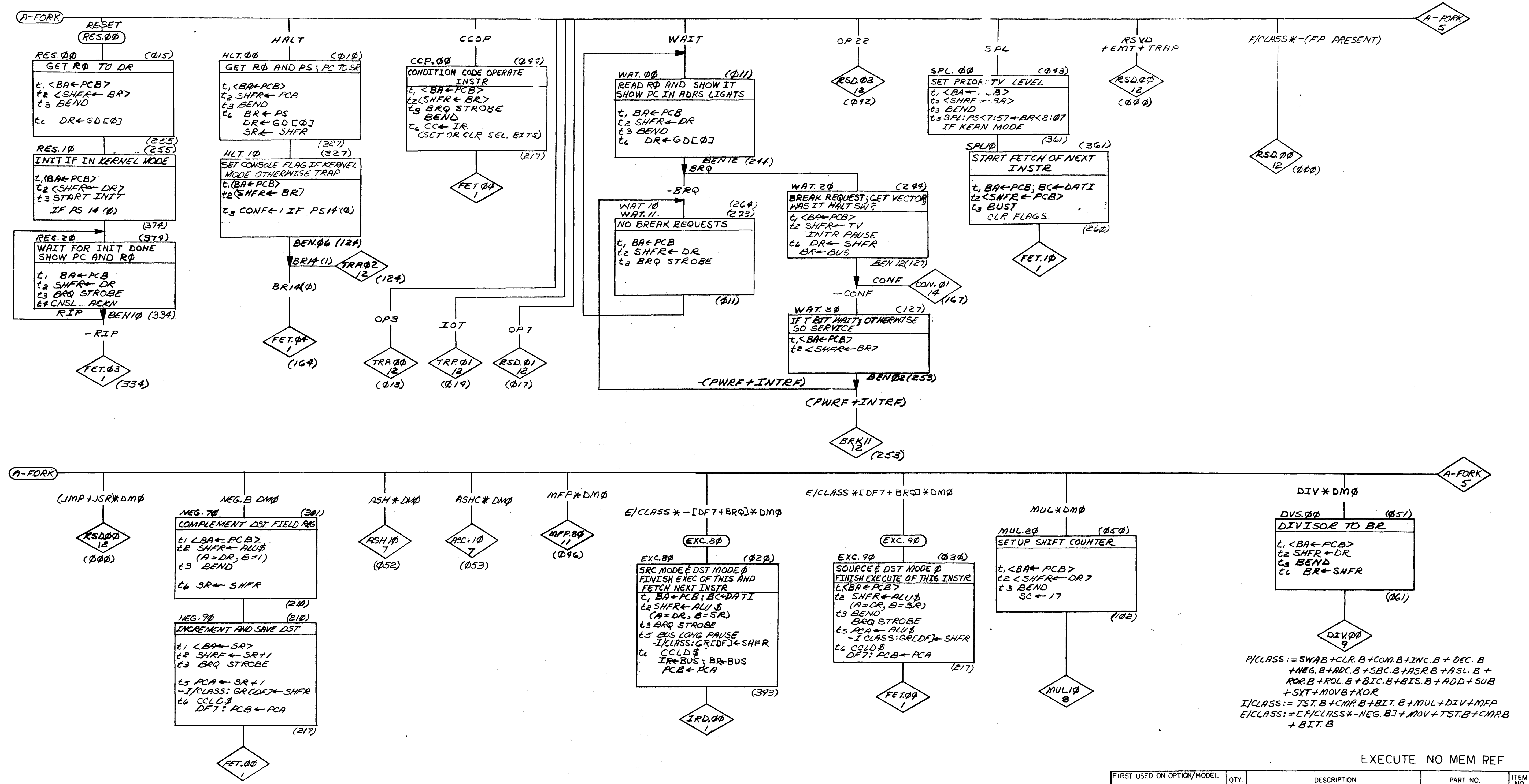
DIST.

REVISIONS | REV | CHANGE NO | CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




P/CLASS := SWAB + CLR.B + COM.B + INC.B + DEC.B + NEG.B + ADC.B + SBC.B + ASR.B + ASL.B + ROR.B + ROL.B + BIC.B + BIS.B + ADD + SUB + SXT + MOVB + XOR

I/CLASS := TST.B + CMP.B + BIT.B + MUL + DIV + MFP

E/CLASS := [P/CLASS*-NEG.B] + MOV + TST.B + CMP.B + BIT.B

EXECUTE NO MEM REF

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | | | |

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL —
FINISH —

DRN. A. Kibat DATE 4-2-71
CHK'D. DATE
ENG. DATE 4-3-72
PROJ. ENG. DATE 4-3-72
PROD. DATE 4-13-72

NEXT HIGHER ASSY B-DD-KB11-Ø

SCALE — SHEET 4 OF 15

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

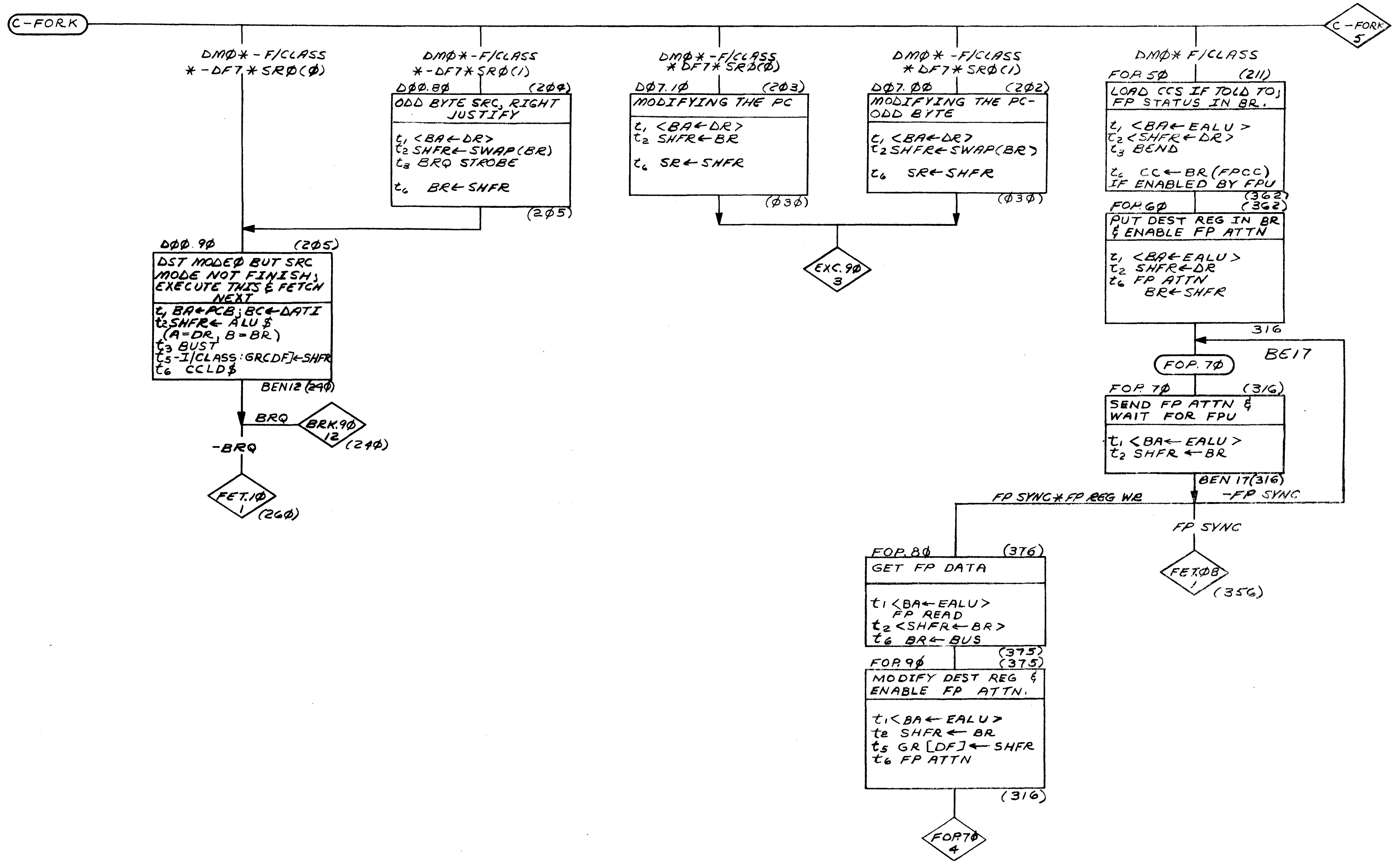
TITLE KB11-A FLOW DIAGRAMS (FLOWS 3)

SIZE D CODE FD NUMBER KB11-A-Ø3 REV. A

REVISIONS — REV. / CHANGE NO. / CHK

DEC FORM NO DRD 102A

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DESTINATION MODE Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX ± .005 .XX ± .02 .X ± .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. A. Kibort — DATE 11/6/72
CHK'D. — DATE 11/12/72
ENG. Steve Jenkins — DATE 4-3-72
PROJ. ENG. Steve Jenkins — DATE 4-3-72
PROD. — DATE 4-13-72
NEXT HIGHER ASSY. B-DD-KB11-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

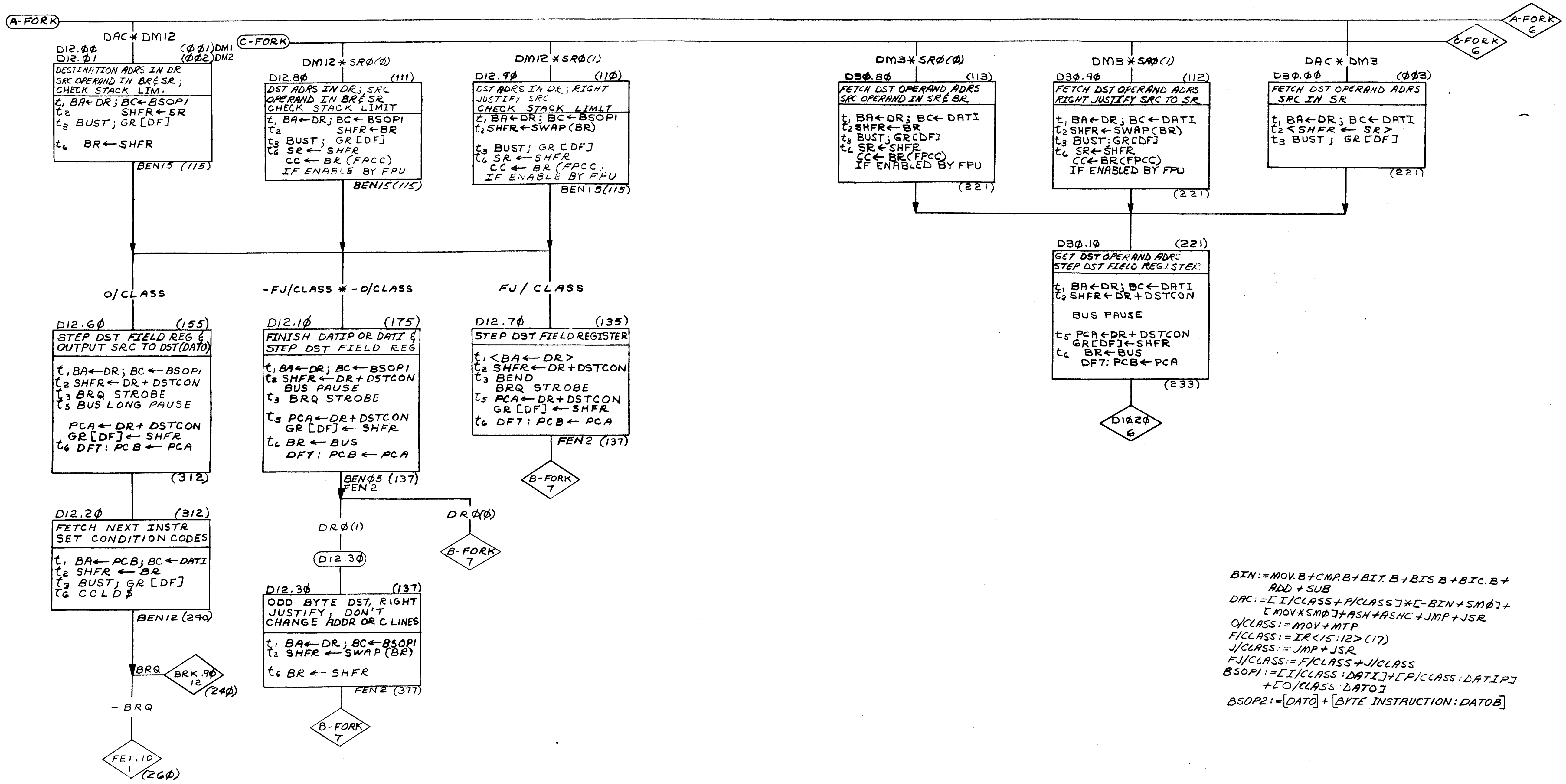
TITLE: KB11-A FLOW DIAGRAMS (FLOWS 4)

SIZE D CODE FD NUMBER KB11-A-Ø3 REV A
SCALE — SHEET 5 OF 15 DIST.

REVISIONS: REV | CHANGE NO | CHK

BRUNING 40-522 15840 DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DESTINATION MODES 1-3

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY √
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. DATE 5/3/71
CHK'D DATE 4/12/72
ENG. DATE 4-3-72
PROJ. ENG. DATE 4-3-72
PROD. DATE 4-13-72

NEXT HIGHER ASSY B-DD-KB11-0

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
KB11-A
FLOW DIAGRAMS
(FLOWS 5)

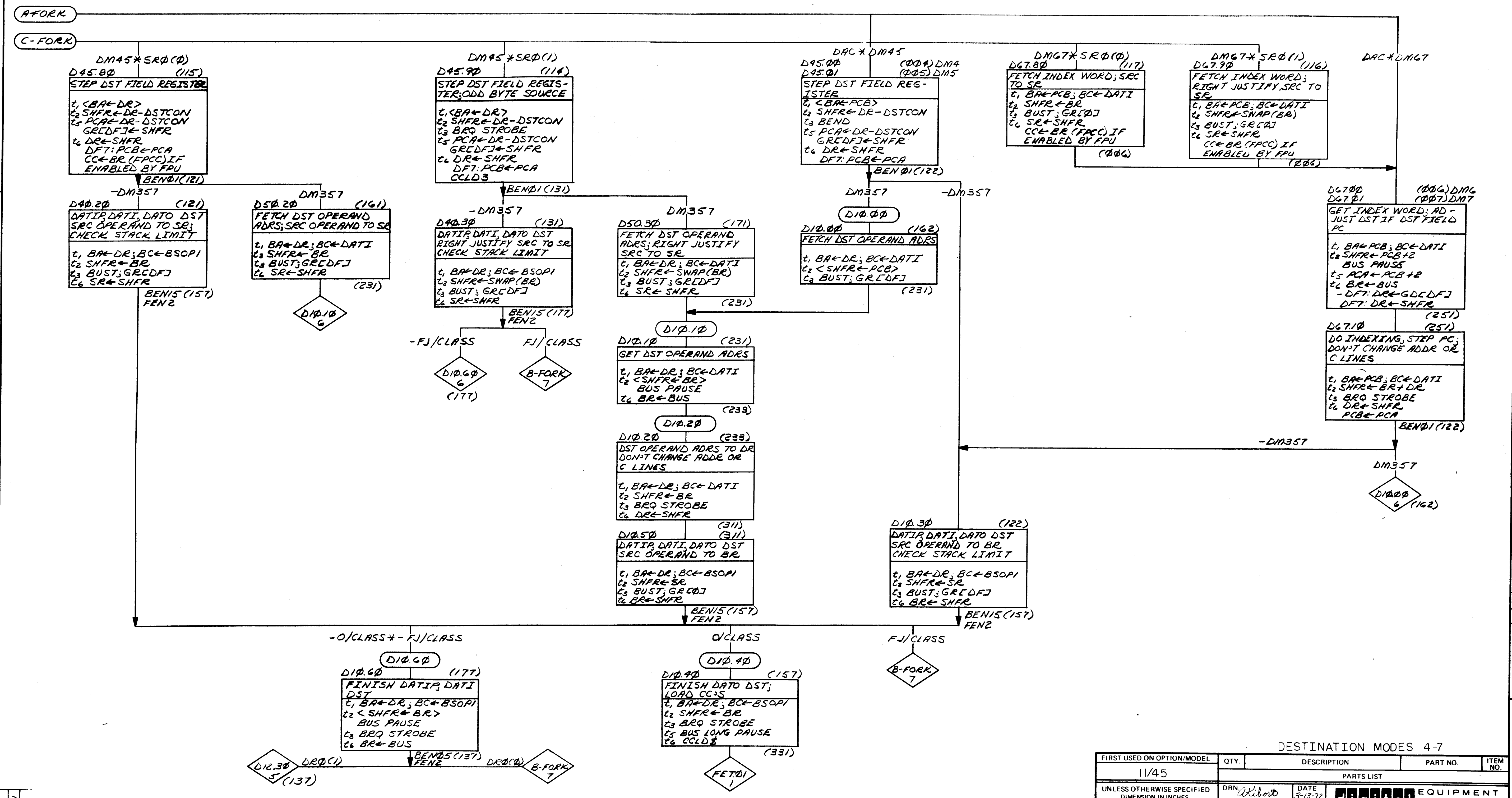
| SIZE | CODE | NUMBER | REV |
|---|---|---|---|
| D | FD | KB11-A-03 | A |

SCALE —
SHEET 6 OF 15
DIST.

REVISIONS | CHK | CHANGE NO | REV

DEC FORM NO DPD 102A

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DESTINATION MODES 4-7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN [signature] DATE 3-13-72
CHKD [signature] DATE 4/12/72
ENG [signature] DATE 4-3-72
PROJ. ENG [signature] DATE 4-3-72
PROD. [signature] DATE 4-13-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

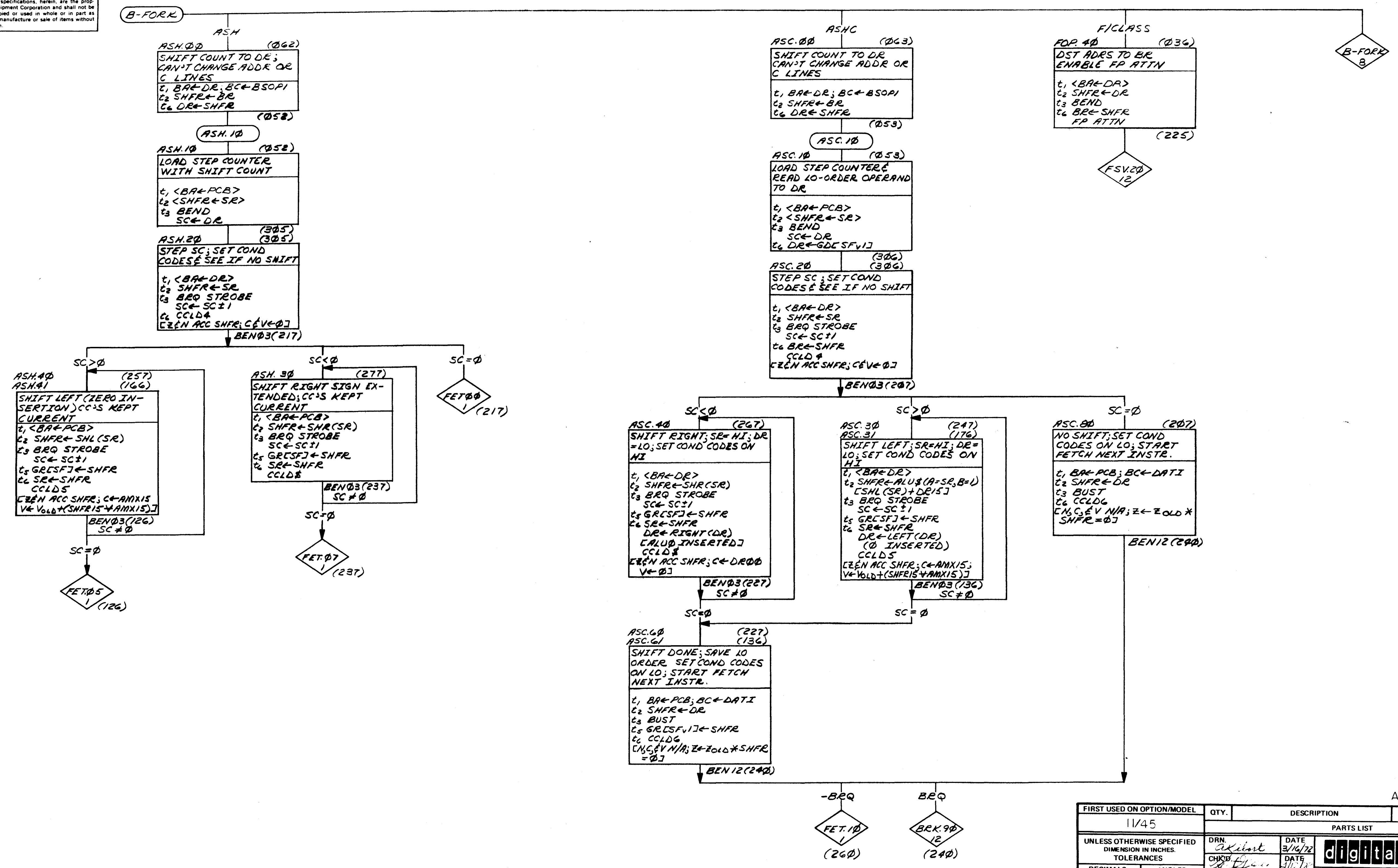
TITLE KB11-A FLOW DIAGRAMS (FLOWS 6)

SIZE D CODE FD NUMBER KB11-A-Ø3 REV. A

SCALE — SHEET 7 OF 15 DIST

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ASH & ASC

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL
FINISH

DRN. A. Kelert DATE 3/16/72 — CHKD. DATE — ENG. DATE — PROJ. ENG. DATE — PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 7)

NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D CODE FD NUMBER KB11-A-Ø3 REV. A

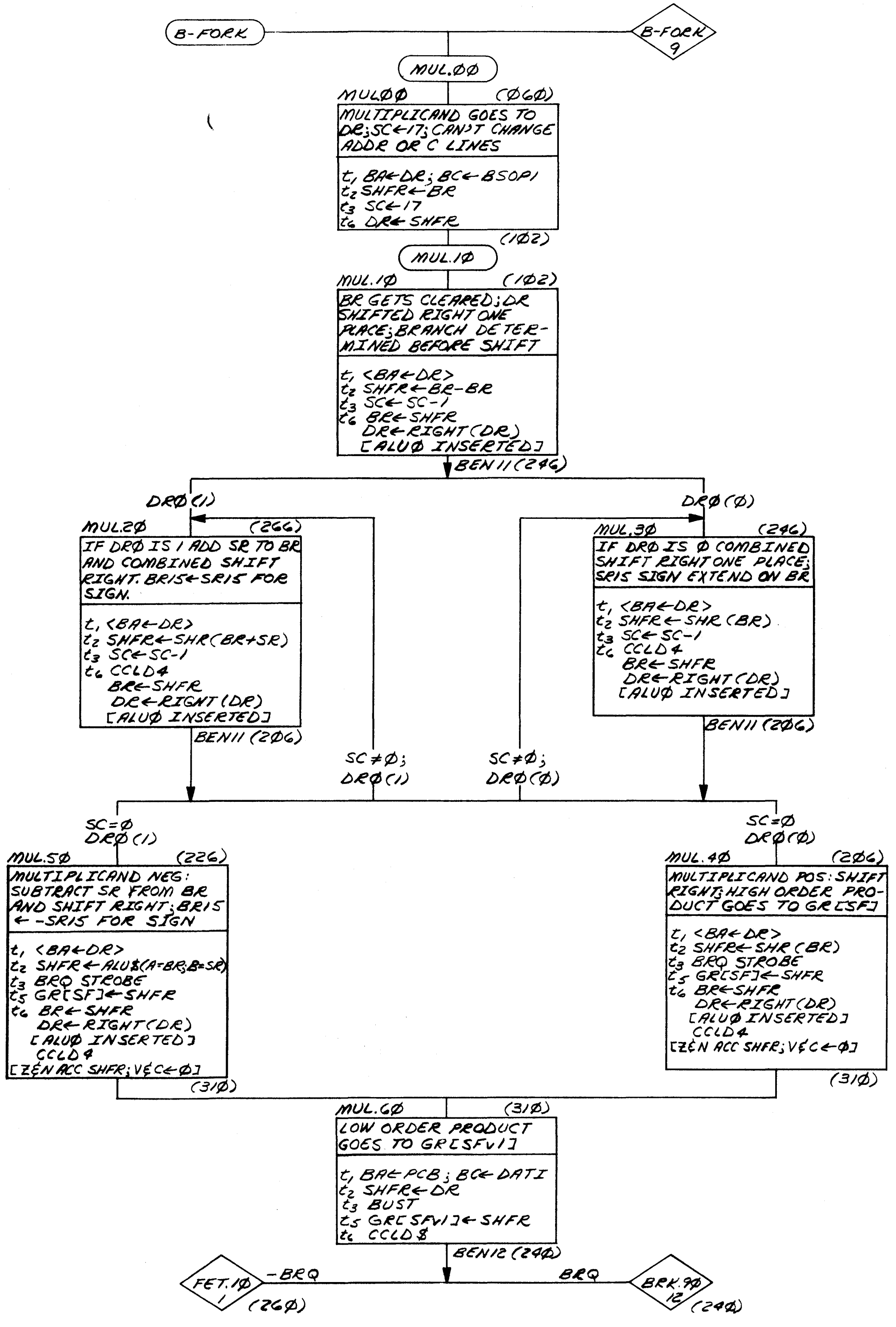
SCALE — SHEET 8 OF 15 DIST.

SIZE D CODE FD NUMBER KB11-A-Ø3 REV A

BRUNING 40-522 15840 — REVISIONS: CHK, CHANGE NO, REV

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




MULTIPLY

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| XXX = .005 XX = .02 X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. DATE 3/16/72 · CHK'D. DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: KB11-A FLOW DIAGRAM (FLOW 8)

NEXT HIGHER ASSY. B-DD-KB11-Ø

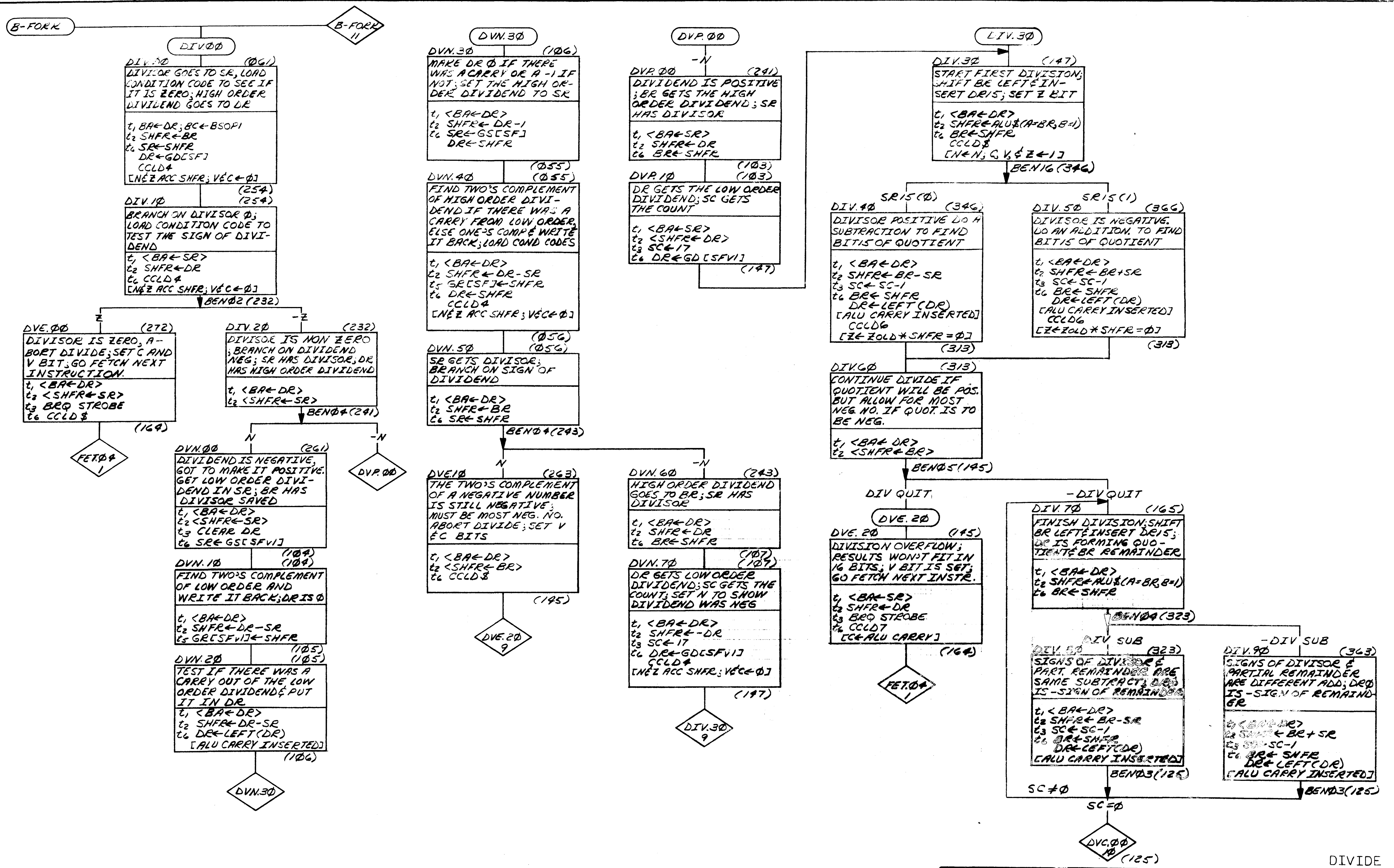
SIZE D · CODE FD · NUMBER KB11-A-Ø3 · REV. A

SCALE — · SHEET 9 OF 15 · DIST.

REVISIONS · REV · CHANGE NO · CHK

BRUNING 40-522 15840 · DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DIVIDE

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. — DATE 3/17/72
CHK'D — DATE
ENG. — DATE 4-3-72
PROJ. ENG. — DATE 4-3-72
PROD. — DATE 4-13-72

NEXT HIGHER ASSY. B-DD-KB11-0

SCALE — SHEET 10 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 9)

SIZE D — CODE FD — NUMBER KB11-A-03 — REV A

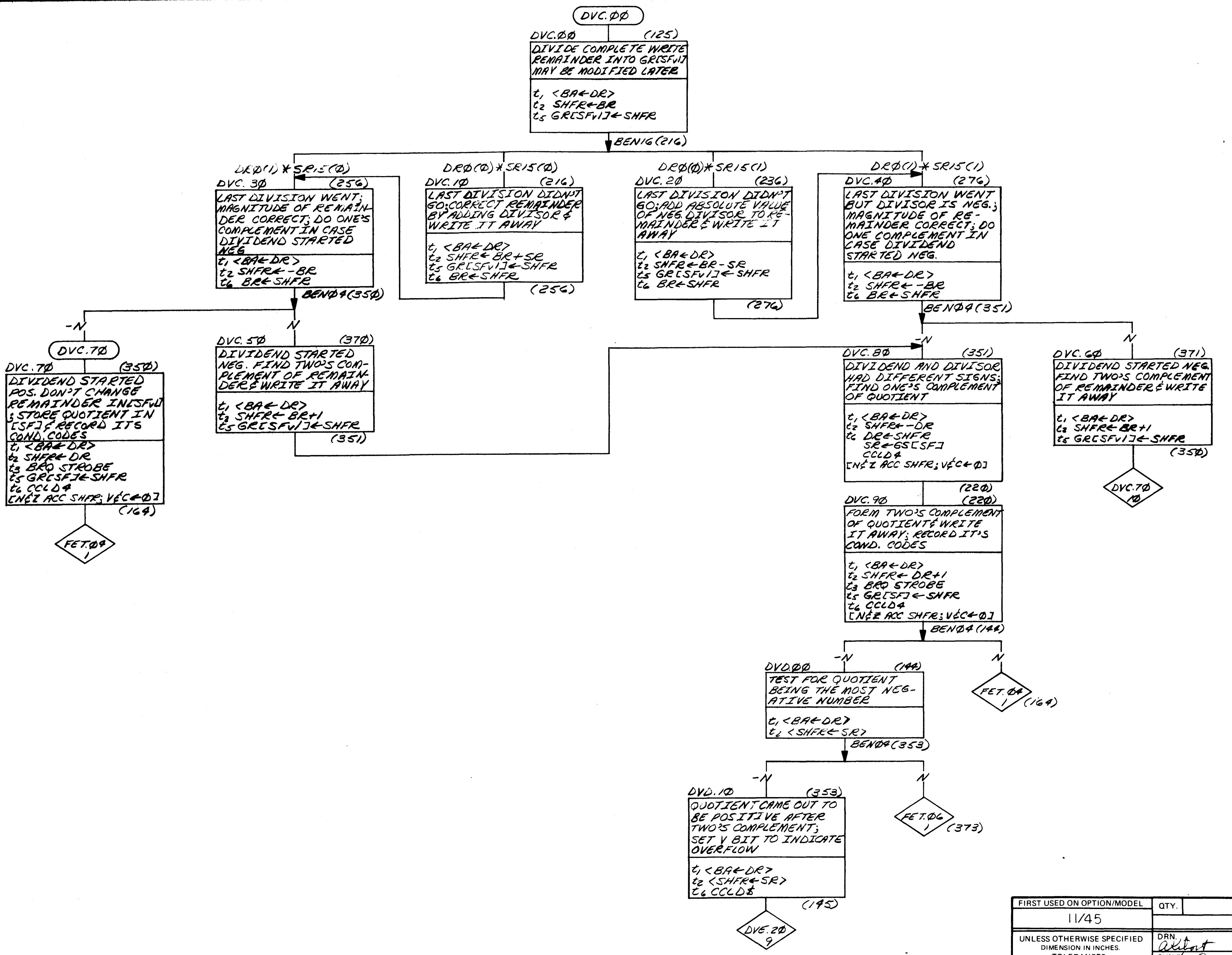
DIST.

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO DRD 102-B

BRUNING 40-522 15840

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DIVIDE

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —
FINISH —

DRN. DATE 3/23/72
CHK'D DATE 4/12/72
ENG. DATE 4-3-72
PROJ. ENG. DATE 4-3-72
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 1Ø)

NEXT HIGHER ASSY. B-DD-KB11-Ø

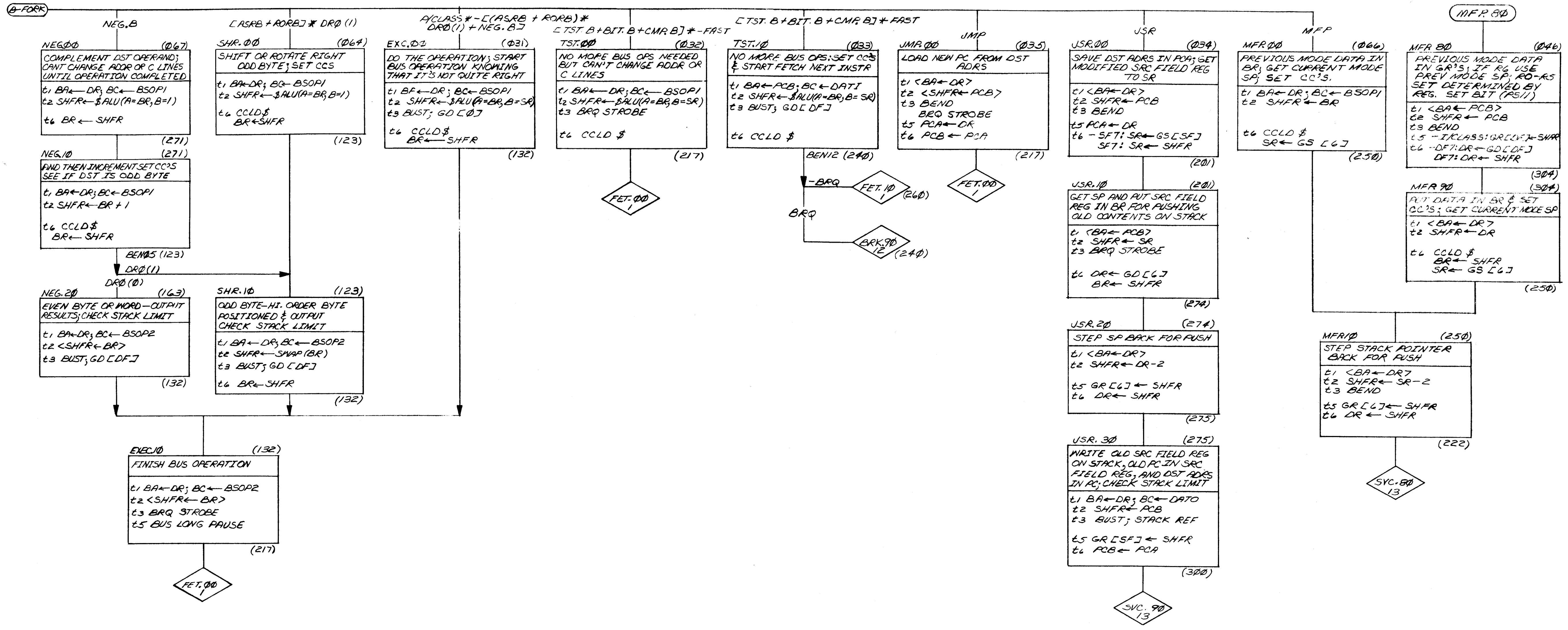
SIZE D CODE FD NUMBER KB11-A-Ø3 REV. A

SCALE — SHEET 11 OF 15

DEC FORM NO DRD 102-B

BRUNING 40-522 15840

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




EXECUTE – MEM REF

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

| | | DATE |
|---|---|---|
| DRN. | M. Pierce | 3/2/72 |
| CHK'D | | 4/12/72 |
| ENG. | | 4.3.72 |
| PROJ. ENG. | | 4.3.72 |
| PROD. | | 4.13.72 |

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —

SHEET 12 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 11)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | FD | KB11-A-Ø3 | A |

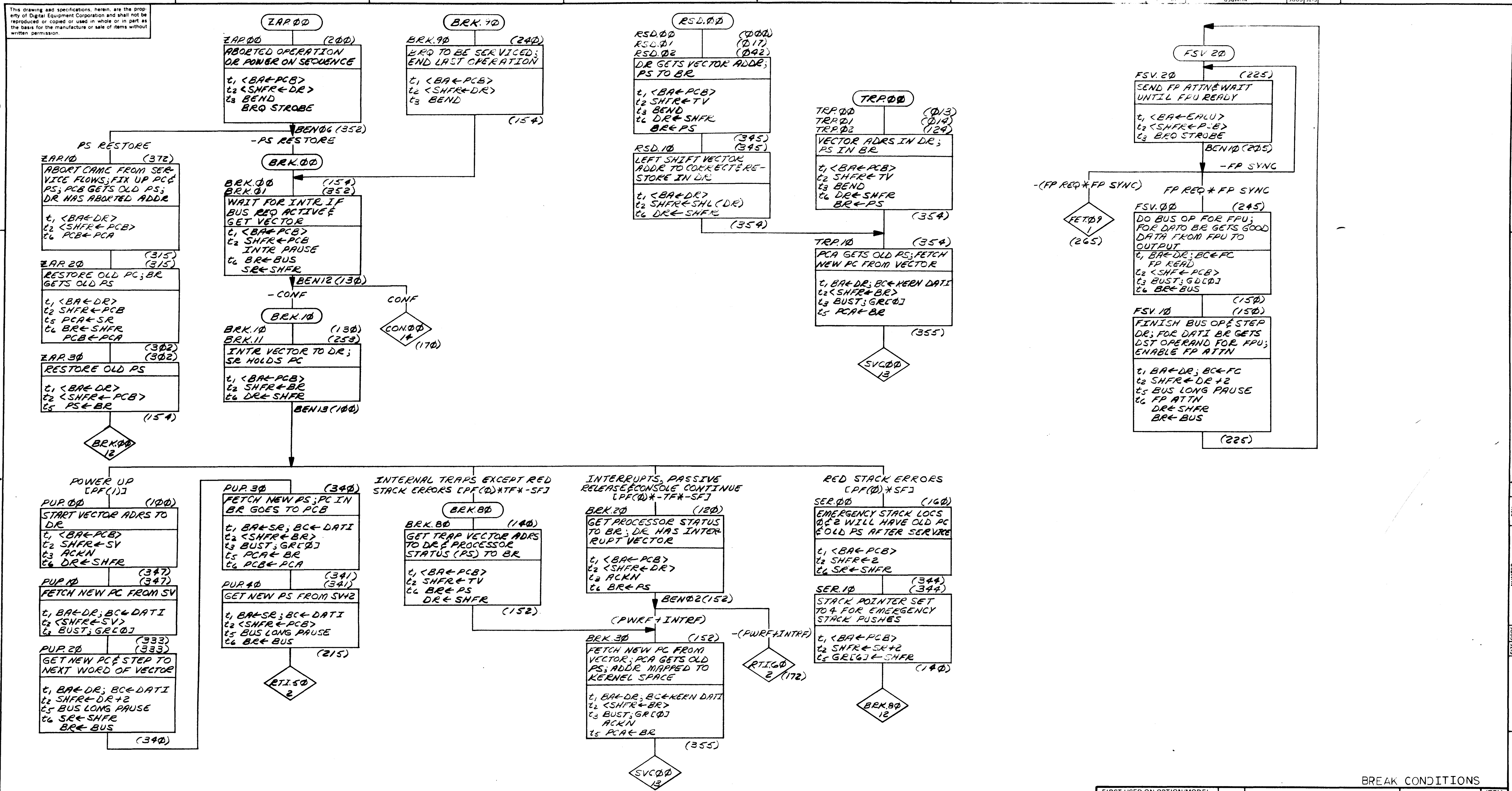
DIST.

REVISIONS: CHK | CHANGE NO | REV

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




BREAK CONDITIONS

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. / DATE · CHK'D. / DATE · ENG. / DATE · PROJ. ENG. / DATE · PROD. / DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 12)

NEXT HIGHER ASSY. B-DD-KB11-Ø

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | FD | KB11-A-Ø3 | A |

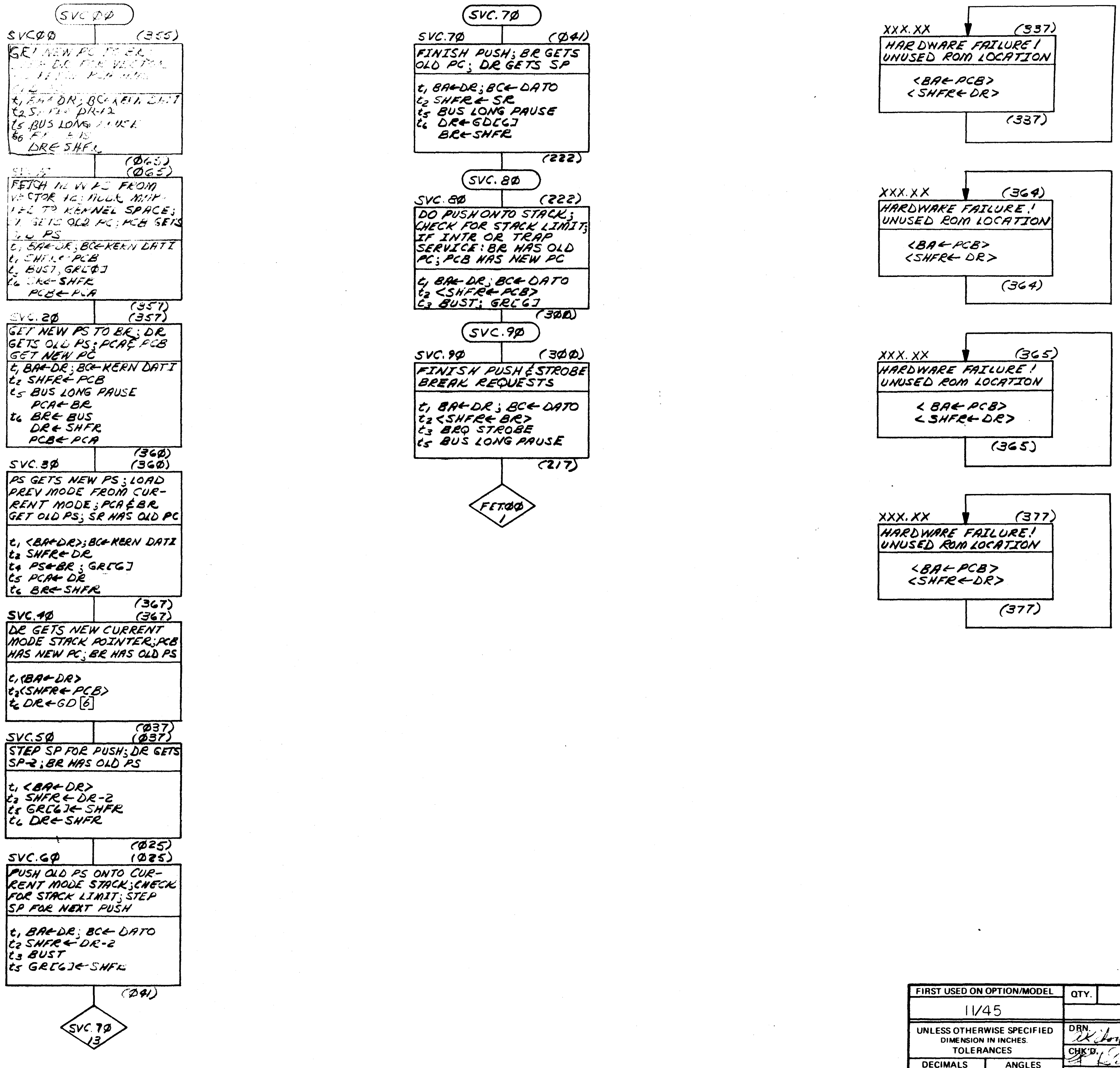
SCALE —— SHEET 13 OF 15 DIST.

REVISIONS: REV / CHANGE NO / CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




SERVICE SEQUENCE

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH

DRN. — DATE 3/14/72
CHK'D. — DATE 4/1/72
ENG. — DATE 4-3-72
PROJ. ENG. — DATE 4-3-72
PROD. — DATE

NEXT HIGHER ASSY. F-DD-KB11-Ø

SCALE —/— SHEET 14 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 13)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | FD | KB11-A-Ø3 | A |

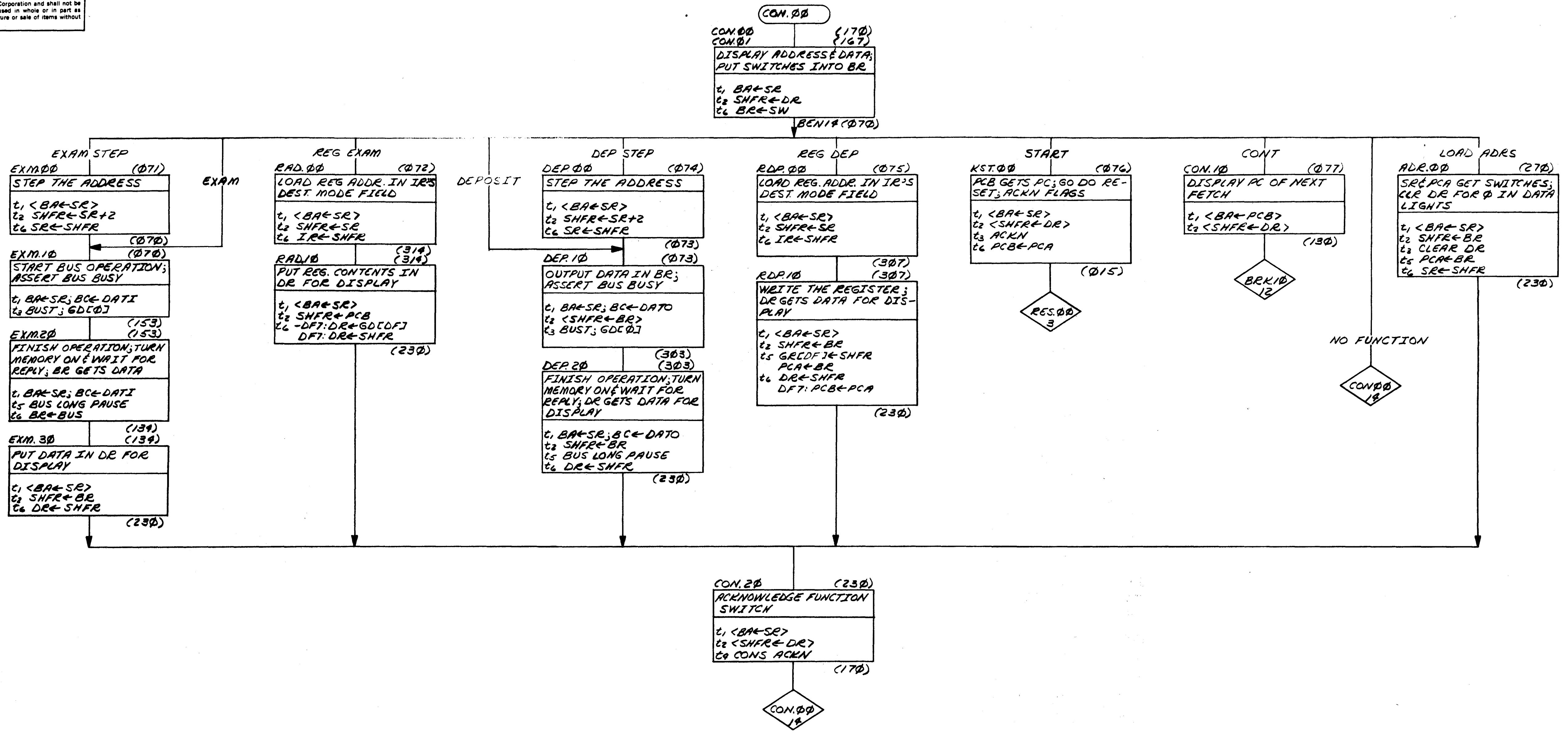
DIST.

BRUNING 40-522 15840

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




CONSOLE

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005, .XX = .02, .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH

DRN. [signature] DATE 3/21/72
CHK'D. [signature] DATE
ENG. [signature] DATE 4-3-72
PROJ. ENG. [signature] DATE 4-3-72
PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE KB11-A FLOW DIAGRAMS (FLOWS 14)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | FD | KB11-A-03 | A |

SCALE —/— SHEET 15 OF 15 DIST.

REVISIONS | CHANGE NO | REV | CHK

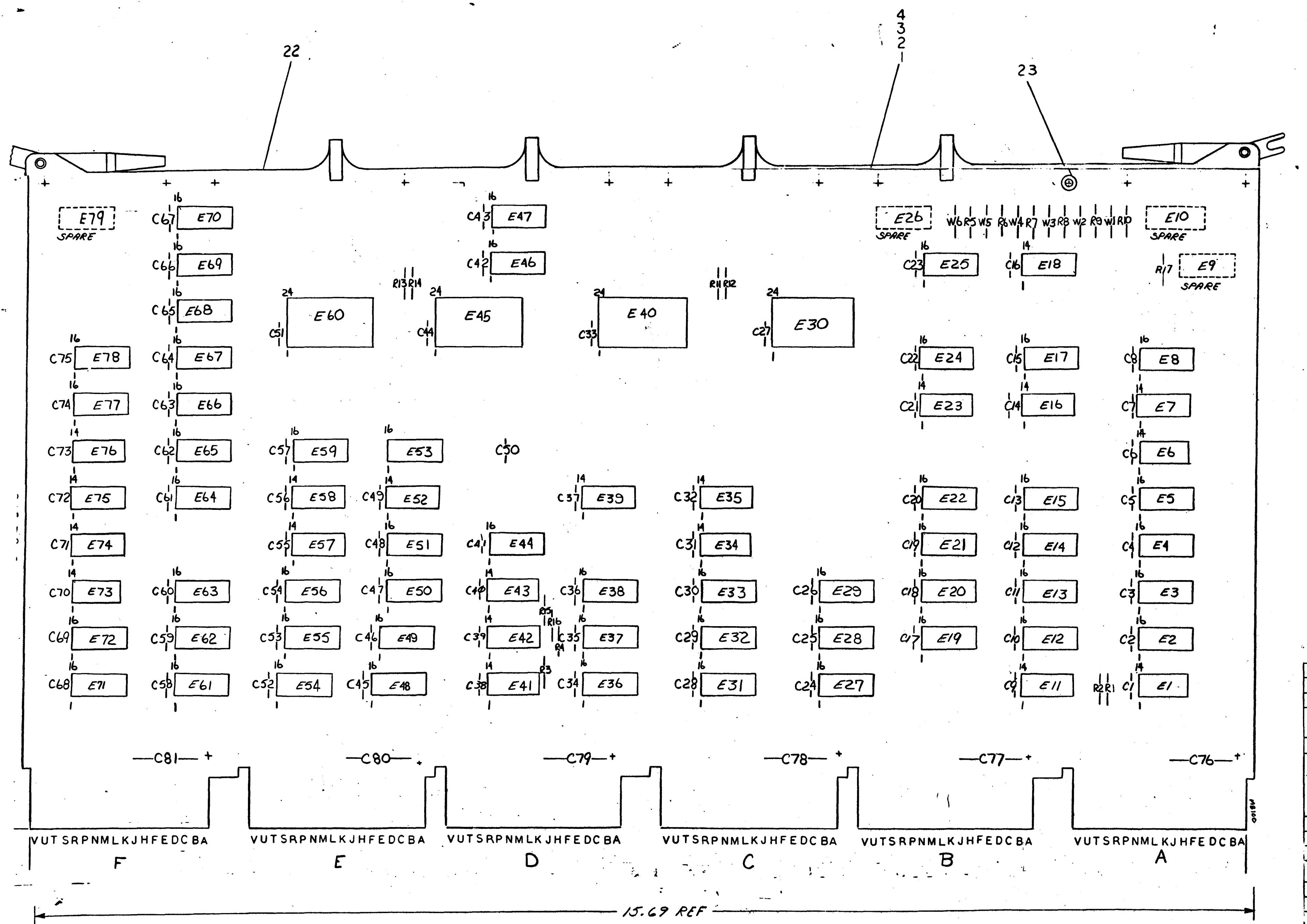
BRUNING 40-522 15840

DEC FORM NO DRD 102-B

D FD KB11-A-Ø3 REV A

NOTES:

1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS WITHOUT VALUE NOTED ARE .01 MFD.
2. E9, EØ, E26 & E79 ARE SPARE IC LOCATIONS
3. R1, R3 & R15 ARE NOT USED



AA2, AV1, BA2, BV1, CA2, CV1, DA2, DV1, EA2, EV1, FA2, FV1 — +5V

ACZ, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1 — GND

6.8 µf C76 THRU C81; .01 µf C1 THRU C75

| | | | | |
|---|---|---|---|---|
| DEC 74182-1 | 8 | 16 | | |
| DEC 74S174 | 8 | 16 | | |
| DEC 74S157 | 8 | 16 | | |
| DEC 74S153 | 8 | 16 | | |
| DEC 74S181 | 12 | 24 | | |
| IC TYPE | GND | +5V | | |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO |
|---|---|---|---|---|
| 12 | | EYELETS | 9006732 | 23 |
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 22 |
| 1 | E44 | IC DEC 74182-1 | 1910551 | 21 |
| 9 | E2, E12, E19, E66, E67, E46, E47, E69, E7Ø | IC DEC 74S174 | 1910550 | 20 |
| 2 | E48, E49 | IC DEC 74S157 | 1910548 | 19 |
| 39 | E3, E4, E5, E8, E13, E14, E15, E17, E20, E21, E22, E24, E25, E27, E28, E29, E31, E32, E33, E36, E37, E38, E50, E51, E53, E54, E55, E56, E59, E61, E62, E63, E64, E65, E68, E71, E72, E77, E78 | I.C. DEC, 74S153 | 1910547 | 18 |
| 1 | E52 | I.C. DEC, 74S2Ø | 1910539 | 17 |
| 4 | E75, E7, E57, E43 | I.C. DEC, 74S11 | 1910537 | 16 |
| 2 | E16, E34 | I.C. DEC, 74S1Ø | 1910536 | 15 |
| 8 | E6, E11, E18, E41, E39, E58, E73, E76 | I.C. DEC, 74SØ4 | 1910534 | 14 |
| 3 | E23, E35, E74 | I.C. DEC, 74SØØ | 1910532 | 13 |
| 4 | E3Ø, E4Ø, E45, E6Ø | I.C. DEC, 74S181 | 1910531 | 12 |
| 2 | E1, E42 | I.C. DEC 74S64 | 1910542 | 11 |
| 2 | R12, R14 | RES., 56ØΩ, 1/4W, 5% | 1301890 | 10 |
| 3 | R2, R4, R16 | RES., 15ØΩ, 1/4W, 5% | 1300250 | 9 |
| 2 | R11, R13 | RES., 33ØΩ, 1/4W, 5% | 1300295 | 8 |
| 7 | R5 THRU R1Ø, R17 | RES. 10K, 1/4W, 5% | 1300479 | 7 |
| 6 | C76 THRU C81 | CAP., 6.8µf, 35V, 2Ø% | 1000067 | 6 |
| 75 | C1 THRU C75 | CAP, .01µf, 100V, 20% | 1001610 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009586 | 4 |
| REF | | MODULE ECO HISTORY | E-MH-M8100-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M8100-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8100-0-4 | 1 |

PARTS LIST

ETCH BOARD REV C

| REV | CHANGE NO. | CHK |
|---|---|---|
| C | M8100-00003 | S. JENKINS 2/8/73 |
| B | M8100-00002 | S. JENKINS |
| A | M8100-00001 (A) ORIGINATED | S. JENKINS |

REVISIONS

| DEC NO | EIA NO | DEC NO | EIA NO |
|---|---|---|---|

SEMICONDUCTOR CONVERSION CHART

DRN. / CHK'D. / ENG. / PROJ. ENG. / PROD.

NEXT HIGHER ASSY E-UA-KB11-A

SCALE

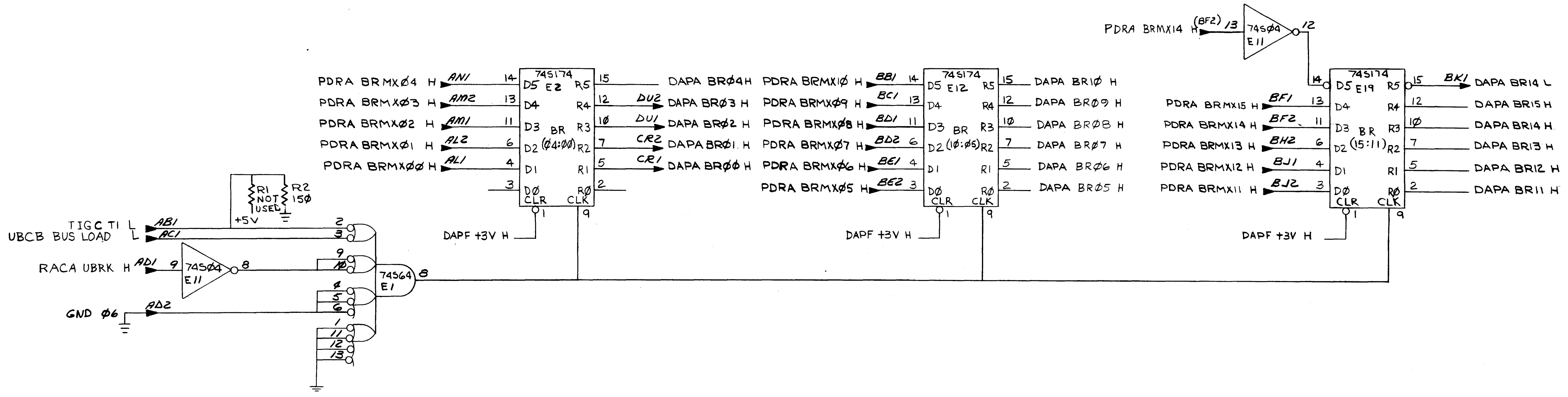
SHEET 1 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE DAP-DATA PATHS

CODE CS NUMBER M8100-0-1 REV. C

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

BUS REGISTER — SLOT6

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL: —/— FINISH: —/—

DRN. DATE 7/9/71; CHK'D DATE 2/25/72; ENG. DATE 2/?/72; PROJ. ENG. DATE ?/?/72; PROD. DATE 2/?/72

digital EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

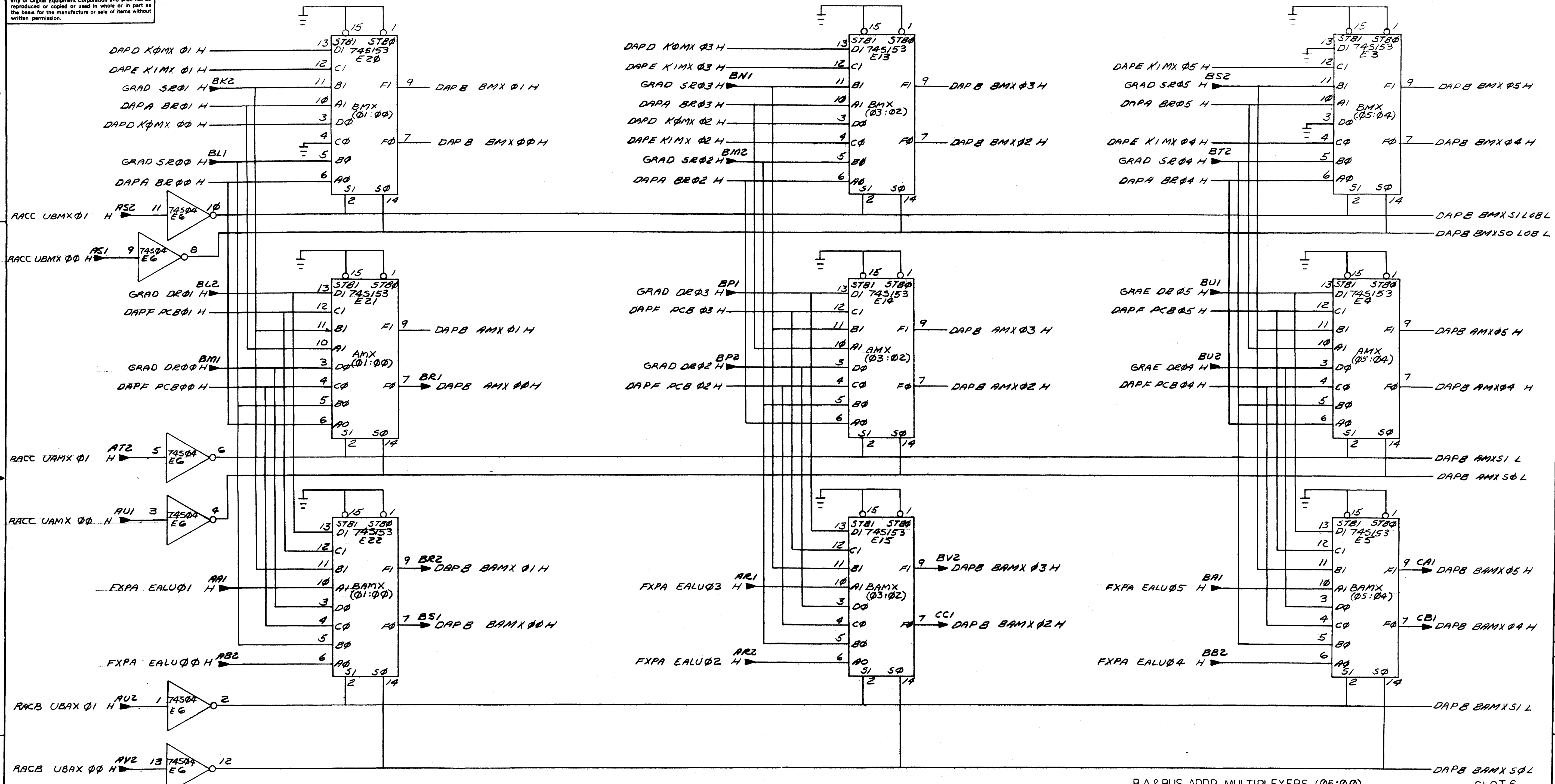
TITLE: DATA PATHS (DAPA)

NEXT HIGHER ASSY.: B-DD-KB11 A

SIZE: D CODE: CS NUMBER: M81ØØ-Ø-1 REV.: C

SCALE —/— SHEET 2 OF 9

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




B,A & BUS ADDR. MULTIPLEXERS (Ø5:ØØ)

SLOT 6

| UBAX Ø1 | ØØ | |
|---|---|---|
| L | L | DR |
| L | H | PCB |
| H | L | SR |
| H | H | FP MAINT |

| UAMX Ø1 | ØØ | |
|---|---|---|
| L | L | DR |
| L | H | PCB |
| H | L | SR |
| H | H | BR |

| UBMX Ø1 | ØØ | |
|---|---|---|
| L | L | KØMX |
| L | H | K1MX |
| H | L | SR |
| H | H | BR |

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL — FINISH

QTY. | DESCRIPTION | PART NO. | ITEM NO. — PARTS LIST

DRN. DATE 7-9-71 — CHKD. DATE 2/2/72 — ENG. DATE 2/2/72 — PROJ. ENG. DATE 2/2/72 — PROD. DATE 2/2/72

NEXT HIGHER ASSY. B-DD-KB11-A

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE: DATA PATHS (DAPB)

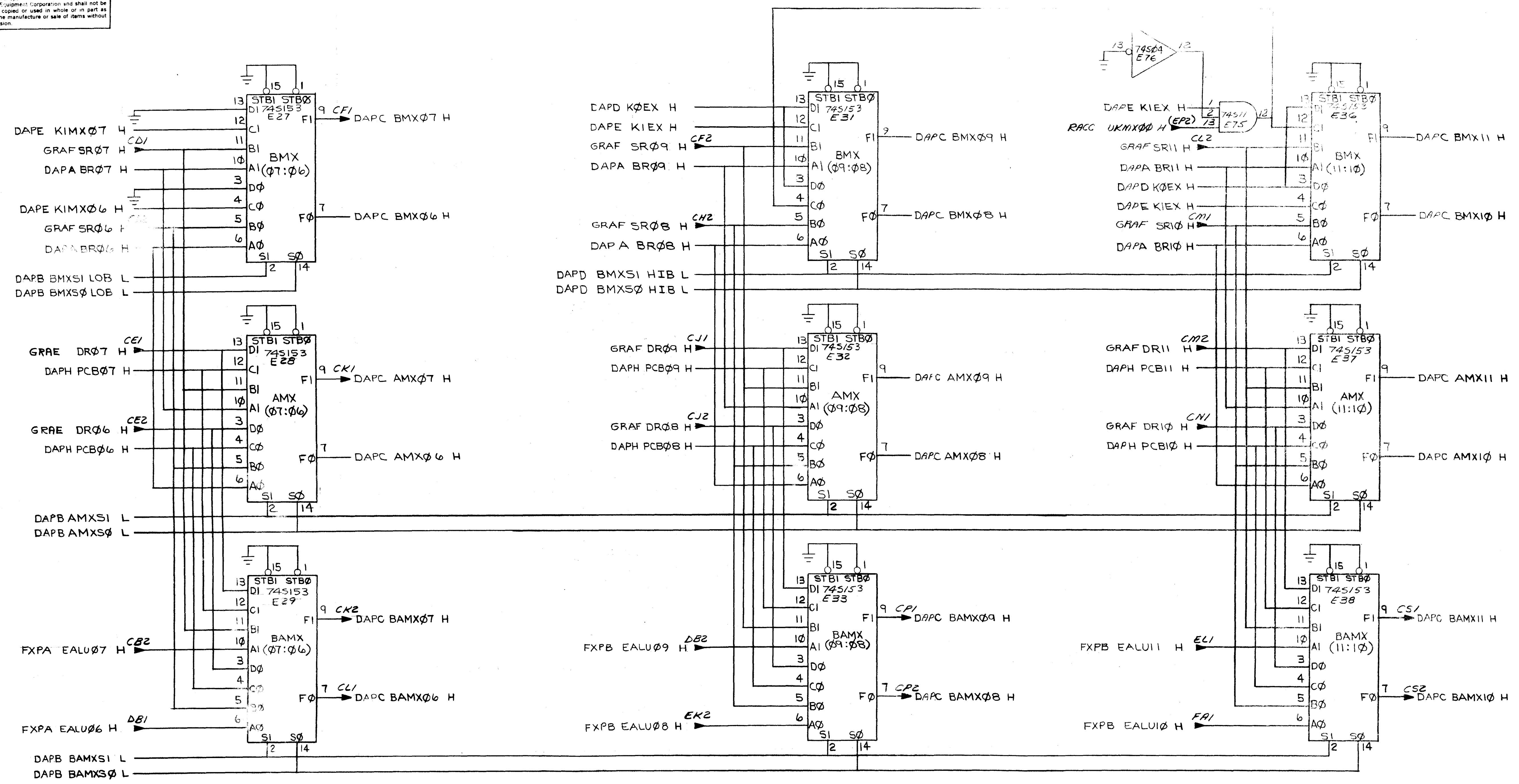
SIZE D — CODE CS — NUMBER M81ØØ-Ø-1 — REV. C

SCALE — SHEET 3 OF 9 — DIST.

REVISIONS: REV. / CHANGE NO. / CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




B, A, & BUS ADDR. MULTIPLEXERS (11:Ø7)

SLOT6

| FIRST USED ON OPTION/MODEL | QTY | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS: .XXX ± .005, .XX ± .02, .X ± .1 — ANGLES: ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN / DATE 7-9-71; CHK'D / DATE; ENG / DATE; PROJ ENG / DATE; PROD / DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: DATA PATHS (DAP C)

NEXT HIGHER ASSY: B-DD-KB11-A

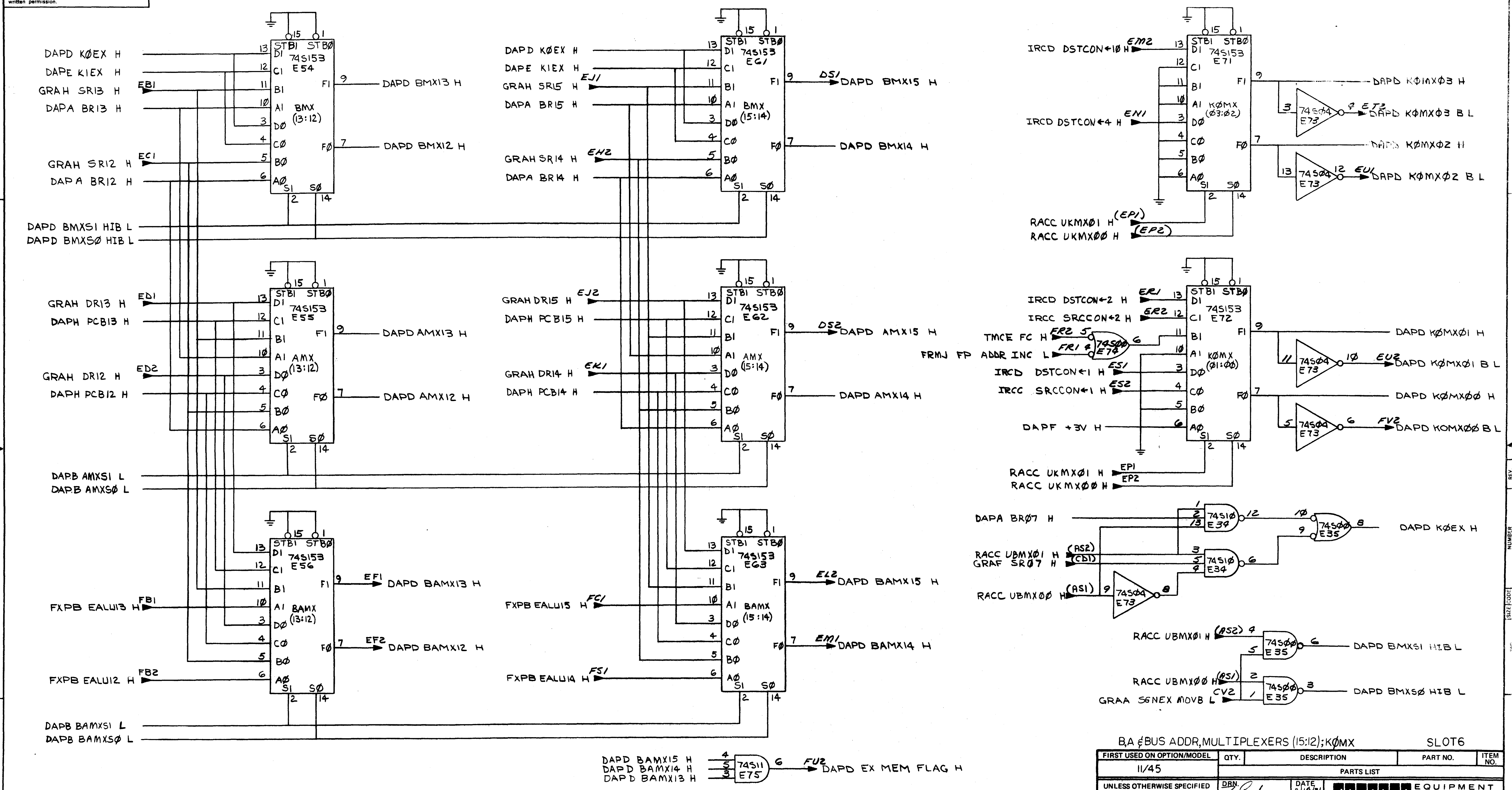
SIZE D | CODE CS | NUMBER M8100-Ø-1 | REV. C

SCALE —//— | SHEET 4 OF 9

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| UKMX Ø1 | ØØ | KØMX |
|---|---|---|
| L | L | 1 |
| L | H | 2 |
| H | L | SRCCON |
| H | H | DSTCON |

B,A & BUS ADDR, MULTIPLEXERS (15:12); KØMX — SLOT6

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1
ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. DATE 7/14/71
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

NEXT HIGHER ASSY.: B-DD-KB11-A

digital EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: DATA PATHS (DAPD)

SIZE: D CODE: CS NUMBER: M 81ØØ-Ø-1 REV.: C

SCALE —
SHEET 5 OF 9

REVISIONS | CHANGE NO | REV | CHK

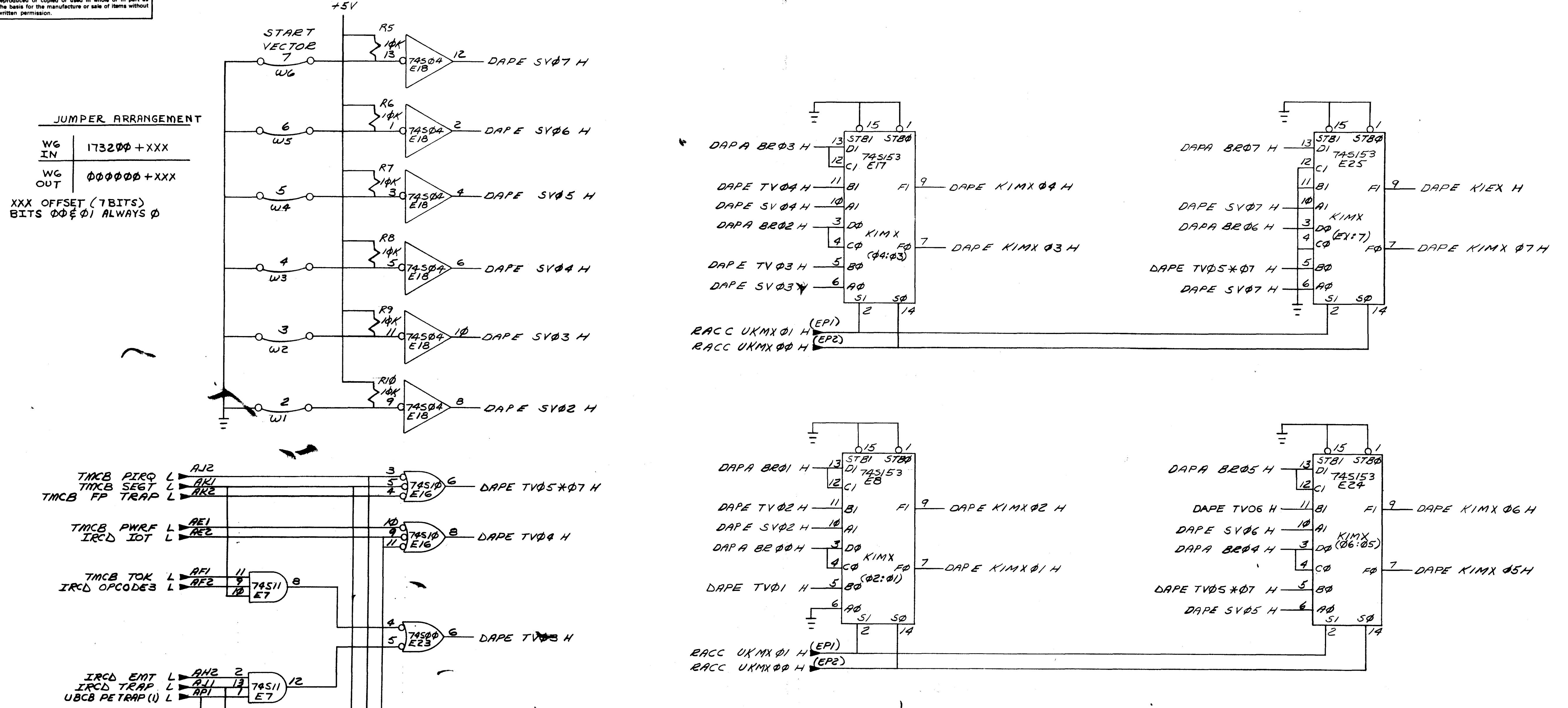
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

JUMPER ARRANGEMENT

| | |
|---|---|
| W6 IN | 1732ØØ + XXX |
| W6 OUT | ØØØØØØ + XXX |

XXX OFFSET (7 BITS)
BITS ØØ & Ø1 ALWAYS Ø




| | TRAP VECTOR |
|---|---|
| RSVD INST | 4, 1Ø (4 LEFT SHIFTED) |
| TOK+3 | 14 |
| IOT | 2Ø |
| PWRF | 24 |
| EMT | 3Ø (14 LEFT SHIFTED) |
| TRAP | 34 (16 LEFT SHIFTED) |
| PIRQ | 24Ø |
| FP TRAP | 244 |
| SEGT | 25Ø |
| PERF | 114 |

NOTE: LEFT SHIFTING TAKES PLACE ON FLOWS 12 RSD.1Ø

| UKMX Ø1 | ØØ | KIMX |
|---|---|---|
| L | L | SV |
| L | H | TV |
| H | L | SOB & MARK DISPLACEMENT |
| H | H | BRXX DISPLACEMENT |

TRAP VECTORS, START VECTOR, & KIMX — SLOT6

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. DATE 7-12-71
CHK'D DATE
ENG. DATE 2/25/72
PROJ. ENG. DATE 2/25/72
PROD. DATE 2/25/72
NEXT HIGHER ASSY. 8-DD-KB11-A
SCALE
SHEET 6 OF 9

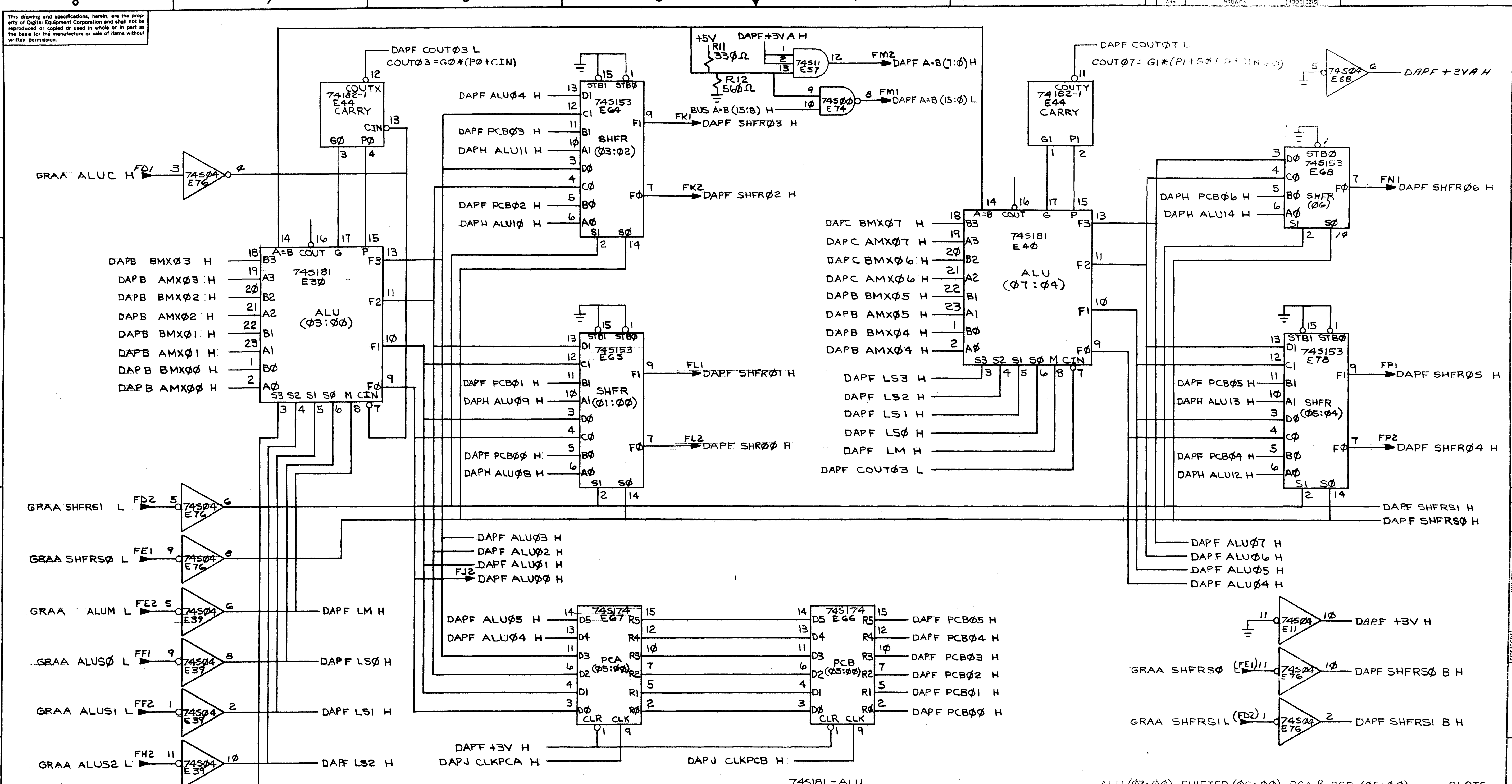
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE DATA PATHS (DAPE)

SIZE D CODE CS NUMBER M81ØØ-Ø-1 REV C

DIST.

DEC FORM NO DRD 102-B




This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

| SHFR | S1 | SØ | H |
|---|---|---|---|
| | L | L | SWAB (OB SWAP) |
| | L | H | PCB |
| | H | L | ALU |
| | H | H | RT. SHIFT ALU |

74S181 - ALU

| S3 S2 S1 SØ | M=H LOGIC FUNCTIONS | M=L; ARITHMETIC OPERATIONS $C_N=Ø=H$ | $C_N=1=L$ |
|---|---|---|---|
| L L L L | F = $\bar{A}$ | F=A | F=A PLUS 1 |
| L L H H | F = Ø | F=MINUS 1 (2'S COMP) | F = ZERO |
| L H H L | F = A∀B | F=A MINUS B MINUS 1 | F=A MINUS B |
| L H H H | F=A $\bar{B}$ | F=A$\bar{B}$ MINUS 1 | F=A $\bar{B}$ |
| H L L H | F= $\overline{A∀B}$ | F = A PLUS B | F=A PLUS B PLUS 1 |
| H L H L | F=B | F=(A+$\bar{B}$) PLUS AB | F=(A+$\bar{B}$) PLUS AB PLUS 1 |
| H L H H | F=AB | F=AB MINUS 1 | F=AB |
| H H L L | F=1 | F=A PLUS A | F=A PLUS A PLUS 1 |
| H H H L | F=A+B | F=(A+$\bar{B}$) PLUS A | F=(A+$\bar{B}$) PLUS A PLUS 1 |
| H H H H | F=A | F = A MINUS 1 | F=A |

ALU (Ø7:ØØ), SHIFTER (Ø6:ØØ), PCA & PCB (Ø5:ØØ) SLOT6

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —//—
FINISH —//—

| QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|

PARTS LIST

DRN DATE 7-12-71
CHK'D DATE 2/25/72
ENG. DATE 2/25/72
PROJ. ENG. DATE 2/25/72
PROD. DATE 2/25/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
# DATA PATHS
(DAPF)

NEXT HIGHER ASSY. B DD-KE11-A

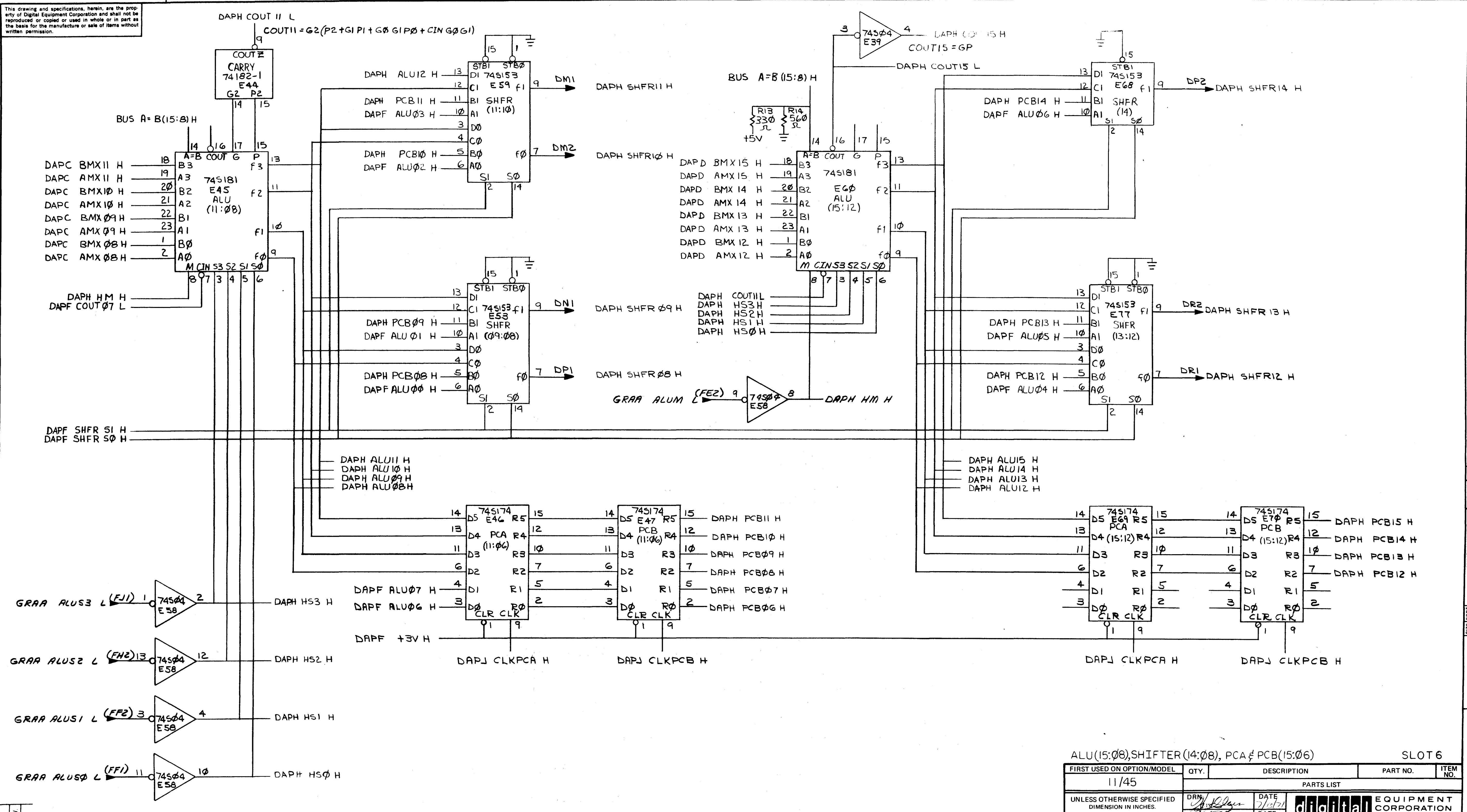
SIZE D CODE CS NUMBER M81ØØ-Ø-1 REV C

SCALE —//— SHEET 7 OF 9 DIST.

REVISIONS CHANGE NO REV CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ALU(15:Ø8), SHIFTER (14:Ø8), PCA & PCB(15:Ø6) SLOT 6

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH —/—

DRN. DATE 7/1/71
CHK'D DATE 2/25/72
ENG. DATE 2/25/72
PROJ. ENG. DATE 2/27/72
PROD. DATE 2/25/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE DATA PATHS (DAPH)

NEXT HIGHER ASSY. B-DD-KB11-A

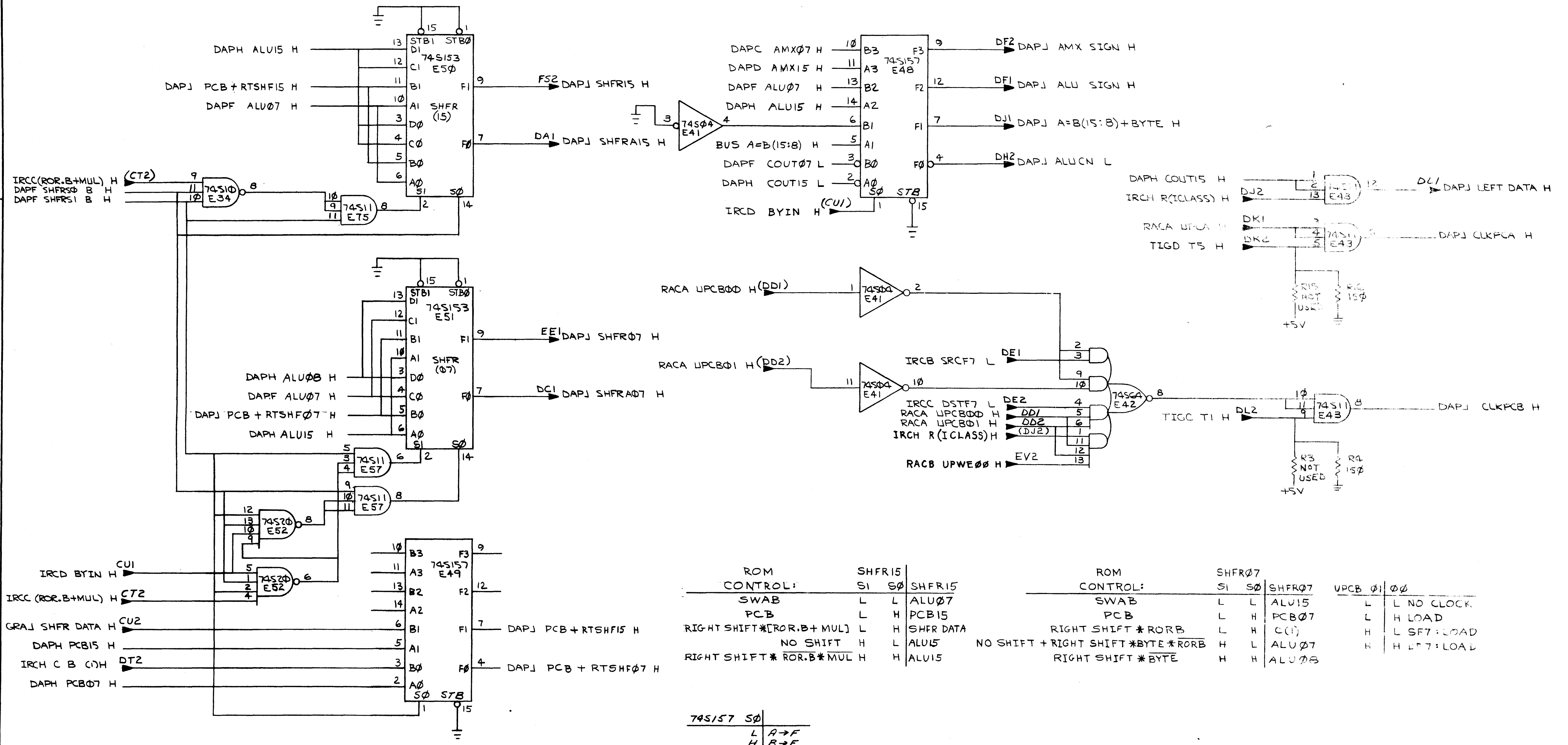
SIZE D CODE CS NUMBER M81ØØ-Ø-1 REV. C

SCALE —/— SHEET 8 OF 9 DIST.

REVISIONS: REV. CHANGE NO. CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| ROM CONTROL: | SHFR15 S1 | SHFR15 S0 | SHFR15 |
|---|---|---|---|
| SWAB | L | L | ALU07 |
| PCB | L | H | PCB15 |
| RIGHT SHIFT*[ROR.B+MUL] | L | H | SHFR DATA |
| NO SHIFT | H | L | ALU15 |
| RIGHT SHIFT* ROR.B*MUL | H | H | ALU15 |

| ROM CONTROL: | SHFR07 S1 | SHFR07 S0 | SHFR07 |
|---|---|---|---|
| SWAB | L | L | ALU15 |
| PCB | L | H | PCB07 |
| RIGHT SHIFT * RORB | L | H | C(1) |
| NO SHIFT + RIGHT SHIFT *BYTE * RORB | H | L | ALU07 |
| RIGHT SHIFT * BYTE | H | H | ALU08 |

| UPCB 01 | 00 |
|---|---|
| L | L NO CLOCK |
| L | H LOAD |
| H | L SF7 : LOAD |
| H | H [illegible]F7 : LOAD |

| 74S157 S0 | |
|---|---|
| L | A→F |
| H | B→F |

SHIFTER (15:07); PCA & PCB CLOCKS SLOT 6

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL — FINISH —

DRN. DATE 8-12-71
CHK'D DATE 2/8/72
ENG. DATE 2/25/72
PROJ. ENG. DATE 2/25/72
PROD. DATE 2/7/72

NEXT HIGHER ASSY. B-DD-KB11-A

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: DATA PATHS (DAPJ)

SIZE D CODE CS NUMBER M8100-0-1 REV C

SCALE — SHEET 9 OF 9

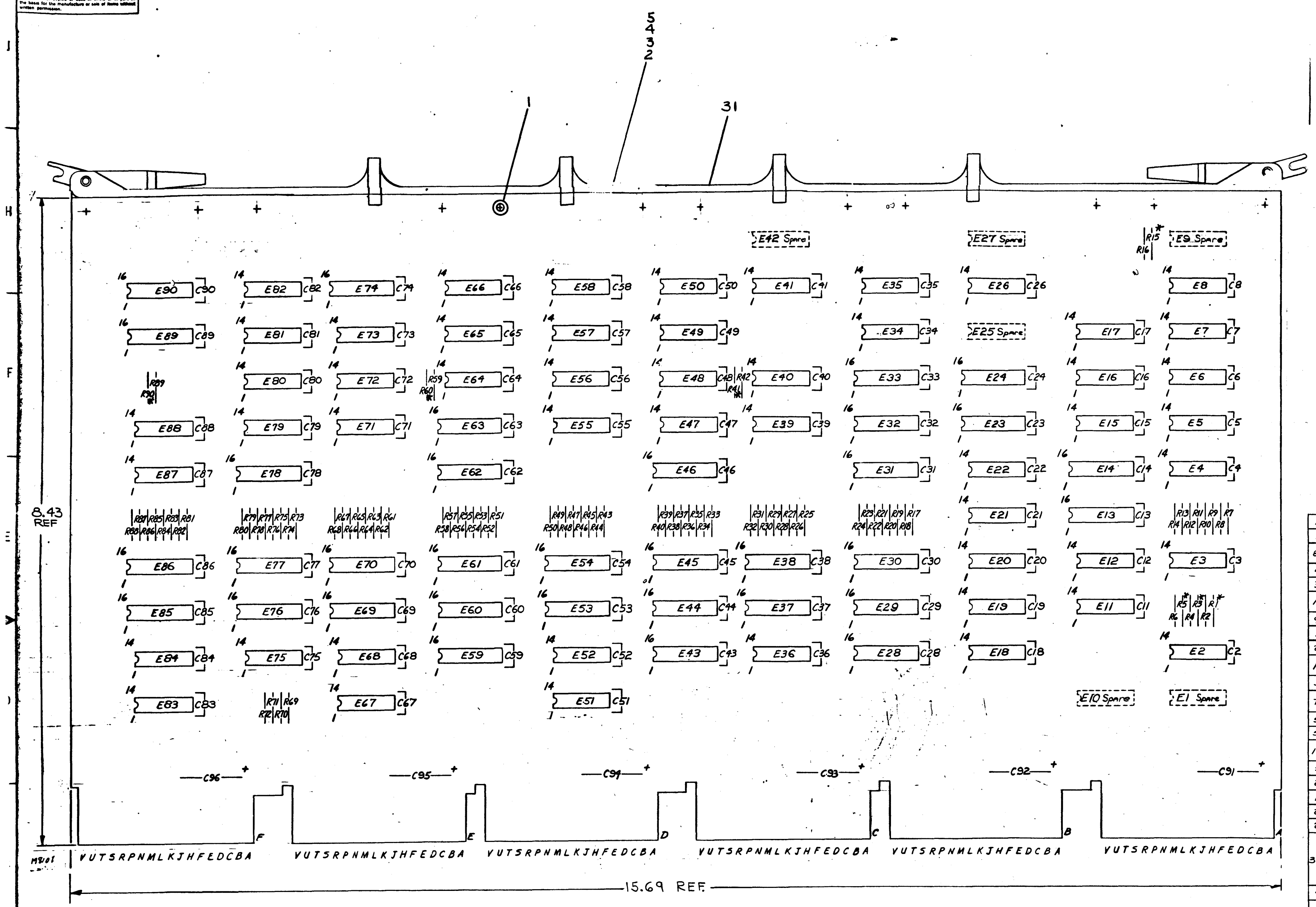
DEC FORM NO DRD 102-B

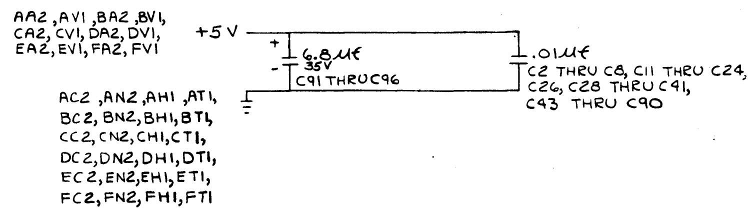
This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

OTHERWISE NOTED RESISTANCE S & CAPACITANCE IS IN OFARADS. CAPACITORS WITHOUT VALUE NOTED ARE .01 MFD.

2. RESISTORS MARKED WITH ASTERISK ARE NOT USED.

3. LOCATIONS MARKED E1, E9, E10, E25, E27, & E42 ARE SPARES.




## PARTS LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 1 | | HANDLE, MODULE | E-PS-121Ø711-2 | 31 |
| 1 | E74 | I.C. DEC, DM8598-AD | 23-CØ3A1 | 30 |
| 8 | E37, E38, E53, E54, E69, E7Ø, E85, E86 | I.C. DEC, 31Ø1A | 1910653 | 29 |
| 4 | E31, E46, E62, E78 | I.C. DEC 74S194 | 1910552 | 28 |
| 3 | E28, E43, E59 | I.C. DEC, 74S174 | 1910550 | 27 |
| 1Ø | E29, E3Ø, E44, E45, E6Ø, E61, E76, E77, E89, E9Ø | I.C. DEC, 74S158 | 1910549 | 26 |
| 4 | E23, E29, E32, E33 | I.C. DEC, 74S153 | 1910547 | 25 |
| 1 | E63 | I.C. DEC, 74S112 | 1910545 | 24 |
| 2 | E5Ø, E79 | I.C. DEC, 74S74 | 1910544 | 23 |
| 11 | E5, E6, E16, E18, E19, E35, E48, E49, E58, E75, E80 | I.C. DEC, 74S64 | 1910542 | 22 |
| 3 | E64, E73, E81 | I.C. DEC, 74S2Ø | 1910539 | 21 |
| 7 | E8, E21, E34, E41, E65, E71, E82 | I.C. DEC, 74S11 | 1910537 | 2Ø |
| 5 | E2, E15, E2Ø, E22, E56 | I.C. DEC, 74S1Ø | 1910536 | 19 |
| 5 | E11, E12, E52, E68, E84 | I.C. DEC, 74SØ5 | 1910535 | 18 |
| 10 | E7, E36, E39, E4Ø, E51, E57, E66, E67, E83, E87 | I.C. DEC, 74SØ4 | 1910534 | 17 |
| 5 | E3, E4, E17, E26, E88 | I.C. DEC, 74SØØ | 1910532 | 16 |
| 2 | E13, E14 | I.C. DEC, 74191 | 1910096 | 15 |
| 1 | E47 | I.C. DEC, 74H5Ø | 1909060 | 14 |
| 2 | E55, E72 | I.C. DEC, 74H3Ø | 1909059 | 13 |
| 2 | R7Ø, R72 | RES., 75ØΩ, 1/4W, ±5% | 1301401 | 12 |
| 32 | R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R43, R45, R47, R49, R51, R53, R55, R57, R61, R63, R65, R67, R73, R75, R77, R79, R81, R83, R85, R87 | RES., 68ØΩ, 1/4W, ±5% | 1301424 | 11 |
| 4 | R8, R1Ø, R12, R14 | RES., 56ØΩ, 1/4W, ±5% | 1301890 | 10 |
| 7 | R2, R4, R6, R16, R42, R59, R89 | RES., 15ØΩ, 1/4W, ±5% | 1300250 | 9 |
| 38 | R7, R9, R11, R13, R18, R2Ø, R22, R24, R26, R28, R3Ø, R32, R34, R36, R38, R4Ø, R44, R46, R48, R5Ø, R52, R54, R56, R58, R62, R64, R66, R68, R69, R71, R74, R76, R78, R8Ø, R82, R84, R86, R88 | RES., 33ØΩ, 1/4W, ±5% | 1300295 | 8 |
| 84 | C2-C8, C11-C24, C26, C28-C41, C43-C9Ø | CAP., .Ø1µf, 1ØØV, ±2Ø% DISC | 1001610 | 7 |
| 6 | C91-C96 | CAP., 6.8µf, 35V, ±2Ø% 'S TANT | 1000067 | 6 |
| 1 | | ETCHED CIRCUIT BOARD | 5009807 | 5 |
| REF | | MODULE ECO HISTORY | B-MH-M81Ø1-Ø-6 | 4 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M81Ø1-Ø-5 | 3 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M81Ø1-Ø-4 | 2 |
| 12 | | EYELET | 9006732 | 1 |

ETCH BOARD REV B

## IC PIN LOCATIONS

| IC TYPE | GND | +5V |
|---|---|---|
| DEC DM8598-AD | 8 | 16 |
| DEC 3101A | 8 | 16 |
| DEC 74S174 | 8 | 16 |
| DEC 74S158 | 8 | 16 |
| DEC 74S153 | 8 | 16 |
| DEC 74S194 | 8 | 16 |
| DEC 74S112 | 8 | 16 |
| DEC 74191 | 8 | 16 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

## JUMPER LIST

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

DEC FORM NO. DRE 104

## REVISIONS

| REV | CHANGE NO. | CHK | |
|---|---|---|---|
| A | ORIGINATED | | |
| B | M8101-C0001 | | 3-15-73 S. JENKINS |
| C | M8101-C0002 | | 4-3-72 R. J. HAILE 6-28-72 J. JENKINS |
| D | M8101-C0003 | | 7-10-72 S. Blake 1-3-73 S. JENKINS 1-22-73 |

## SEMICONDUCTOR CONVERSION CHART

| DEC NO. | EIA NO. | DEC NO. | EIA NO. |
|---|---|---|---|

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

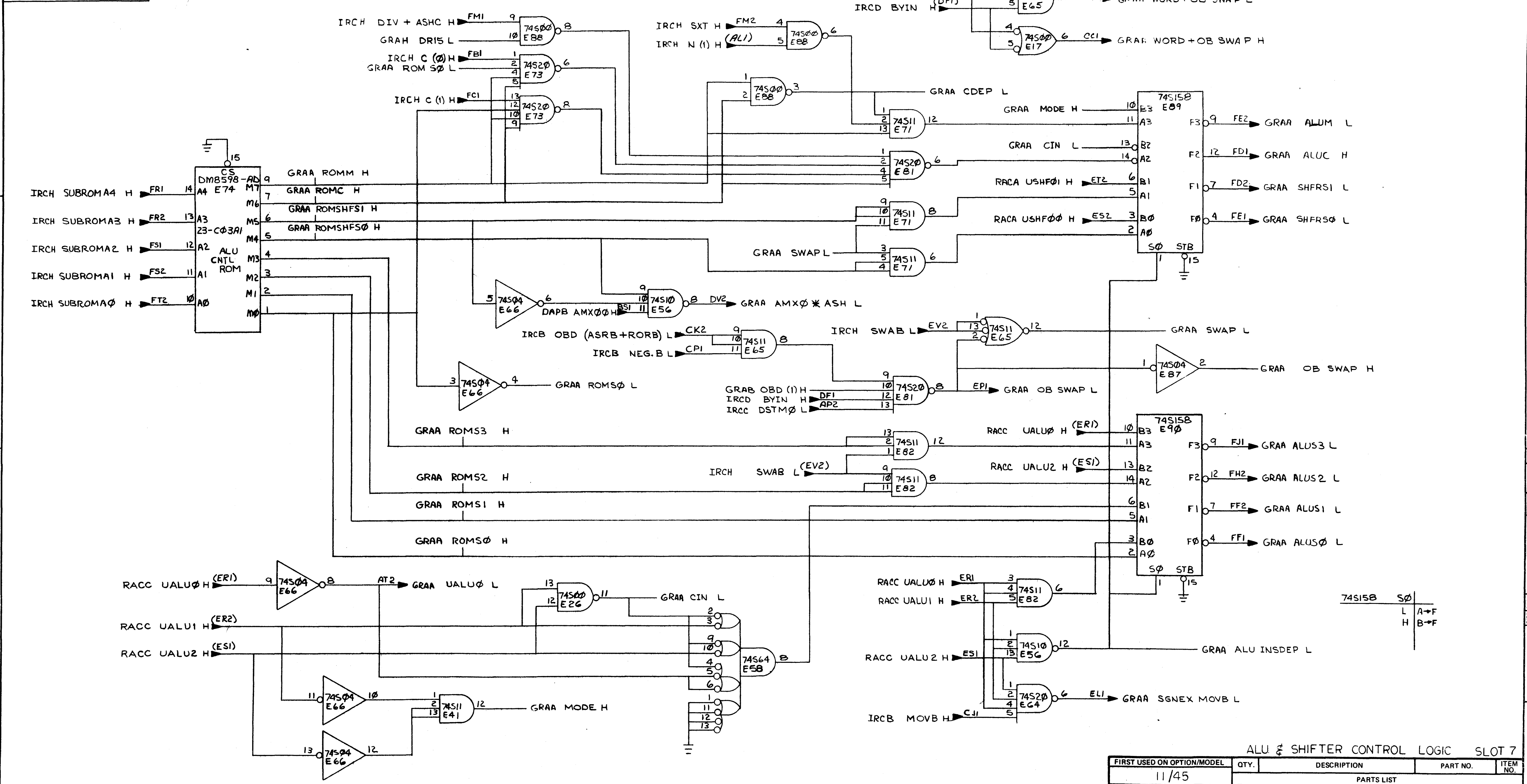
TITLE: GENERAL REGS. & ALU. CNTL.

NEXT HIGHER ASSY: E-[illegible] KB11-Ø

SIZE: E CODE: CS NUMBER: M81Ø1-Ø-1 REV. D

SCALE 2/1 SHEET 1 OF 10

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ALU & SHIFTER CONTROL LOGIC SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL — FINISH —

DRN. T. Guillen DATE 6-23-71 · CHK'D. · ENG. · PROJ. ENG. · PROD.

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

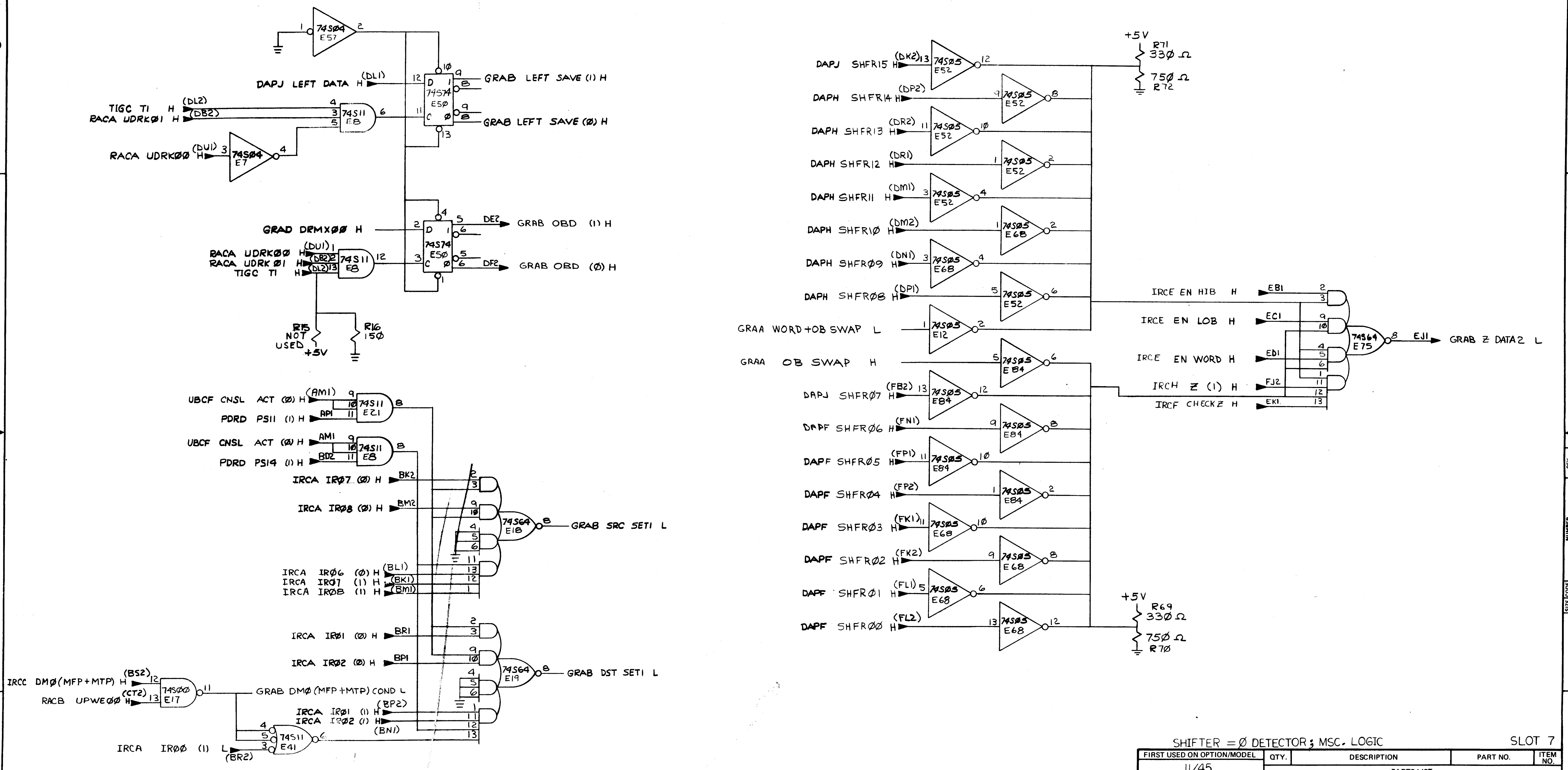
TITLE: GENERAL REGS & ALU CNTL (GRAA)

NEXT HIGHER ASSY. B-DD-KB11-0

SIZE D CODE CS NUMBER M81Ø1-Ø-1 REV. D

SCALE — SHEET 2 OF 1Ø

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




SHIFTER = Ø DETECTOR; MSC. LOGIC — SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. [signature] DATE 7-15-71
CHK'D. [signature] DATE
ENG. [signature] DATE 2/23/72
PROJ. ENG. [signature] DATE 2/23/72
PROD. [signature] DATE 2-25-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: GENERAL REGS. & ALU CNTL (GRAB)

NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D CODE CS NUMBER M81Ø1 - Ø - 1 REV. D

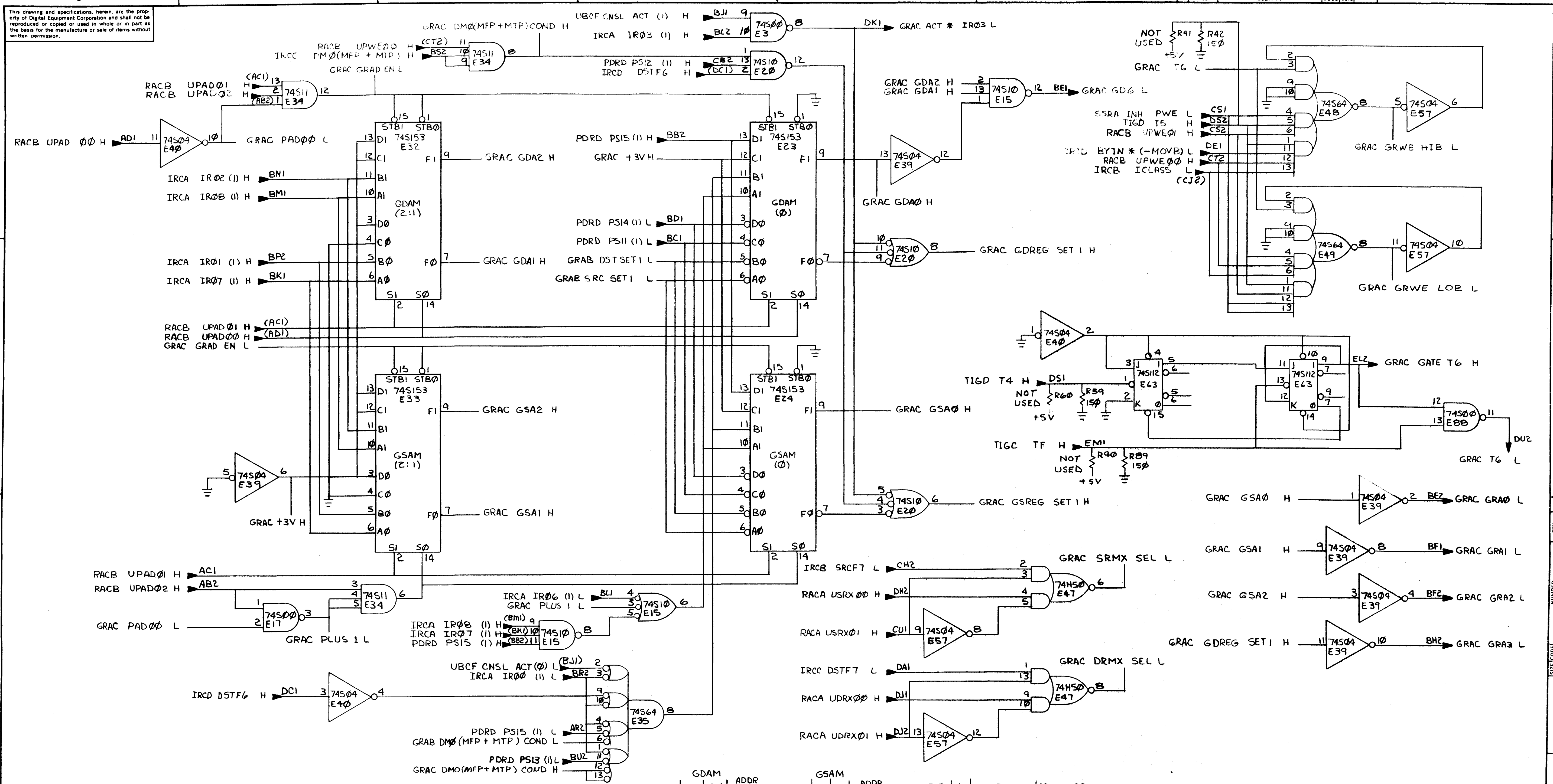
SCALE — SHEET 3 OF 1Ø DIST.

D CS M81Ø1-Ø-1 D

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




GDAM

| UPAD | S1 | SØ | ADDR OUTPUT |
|---|---|---|---|
| Ø | L | L | SF |
| 4 | L | L | SFV1 |
| 1+5 | L | H | DF |
| 2 | H | L | 5 |
| 3+7 | H | H | 6 |

GSAM

| UPAD | S1 | SØ | ADDR OUTPUT |
|---|---|---|---|
| Ø+1 | L | L | SF |
| 4 | L | L | SFV1 |
| 5 | L | H | DF |
| 2+3 | H | L | 5 |
| 7 | H | H | 6 |

| UPWE Ø1 | ØØ | GRWE LOB | GRWE HIB |
|---|---|---|---|
| L | L | DON'T WRITE | DON'T WRITE |
| L | H | WRITE COND: $\overline{\text{I CLASS}}$ | WRITE COND: $\overline{\text{I CLASS}}$ + $\overline{\text{BYTE INST}}$ +MOVB (SIGN EXTENDED) |
| H | L | WRITE | WRITE |
| H | H | NOT USED | NOT USED |

| USRX Ø1 | ØØ | OUTPUT (SRMX) |
|---|---|---|
| L | L | SHFR |
| L | H | GS |
| H | L | SF7: SHFR ; $\overline{\text{SF7}}$: GS |
| H | H | NOT USED |

| UDRX Ø1 | ØØ | OUTPUT (DRMX) |
|---|---|---|
| L | L | SHFR |
| L | H | GD |
| H | L | DF7: SHFR; $\overline{\text{DF7}}$: GD |
| H | H | CLEAR DR |

GENERAL REGS ADDR & WRITE PULSE CNTL SLOT 7

FIRST USED ON OPTION/MODEL: 11/45

| QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN — DATE 12/16/71
CHK'D — DATE
ENG. Jenkins — DATE 2/23/72
PROJ. ENG. — DATE 2/23/72
PROD. — DATE 2-25-72

NEXT HIGHER ASSY. B-DD-KB11-O
SCALE —
SHEET 4 OF 1Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

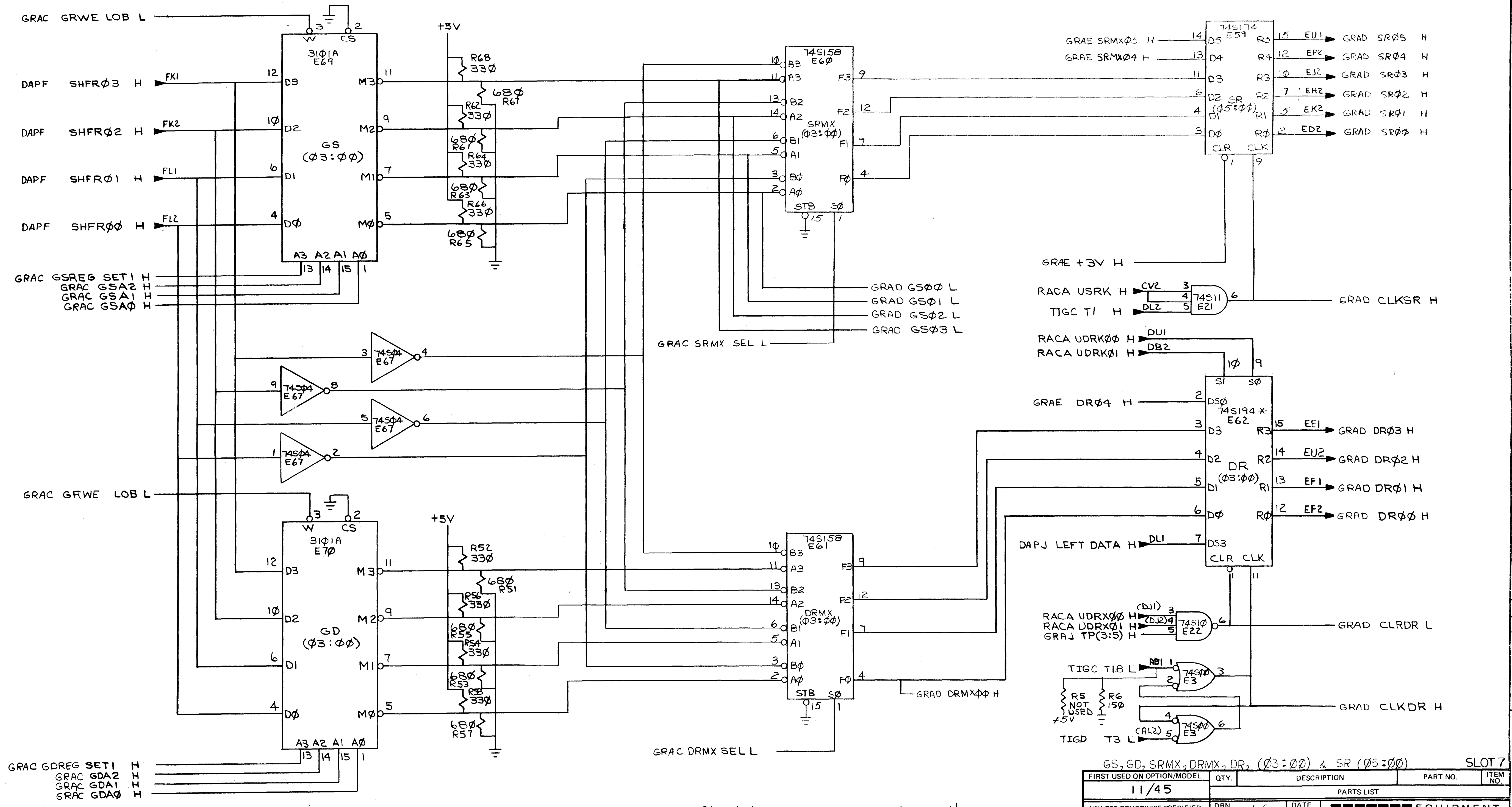
TITLE: GENERAL REGS & ALU CNTL (GRAC)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M81Ø1-Ø-1 | D |

DIST.

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| 74S194 | S1 | SØ | |
|---|---|---|---|
| | L | L | NO-OP |
| | L | H | SHIFT RIGHT (DSØ) |
| | H | L | SHIFT LEFT (DS3) |
| | H | H | LOAD |

| 74S158 | SØ | OUTPUT |
|---|---|---|
| | L | A → F |
| | H | B → F |

NOTE:
* EARLY MACHINES HAVE 74194-1

GS, GD, SRMX, DRMX, DR, (Ø3:ØØ) & SR (Ø5:ØØ) SLOT 7

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .XXX = .005, .XX = .02, .X = .1; ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//— FINISH —//—

DRN. DATE 7-13-71 · CHK'D DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE 2-25-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

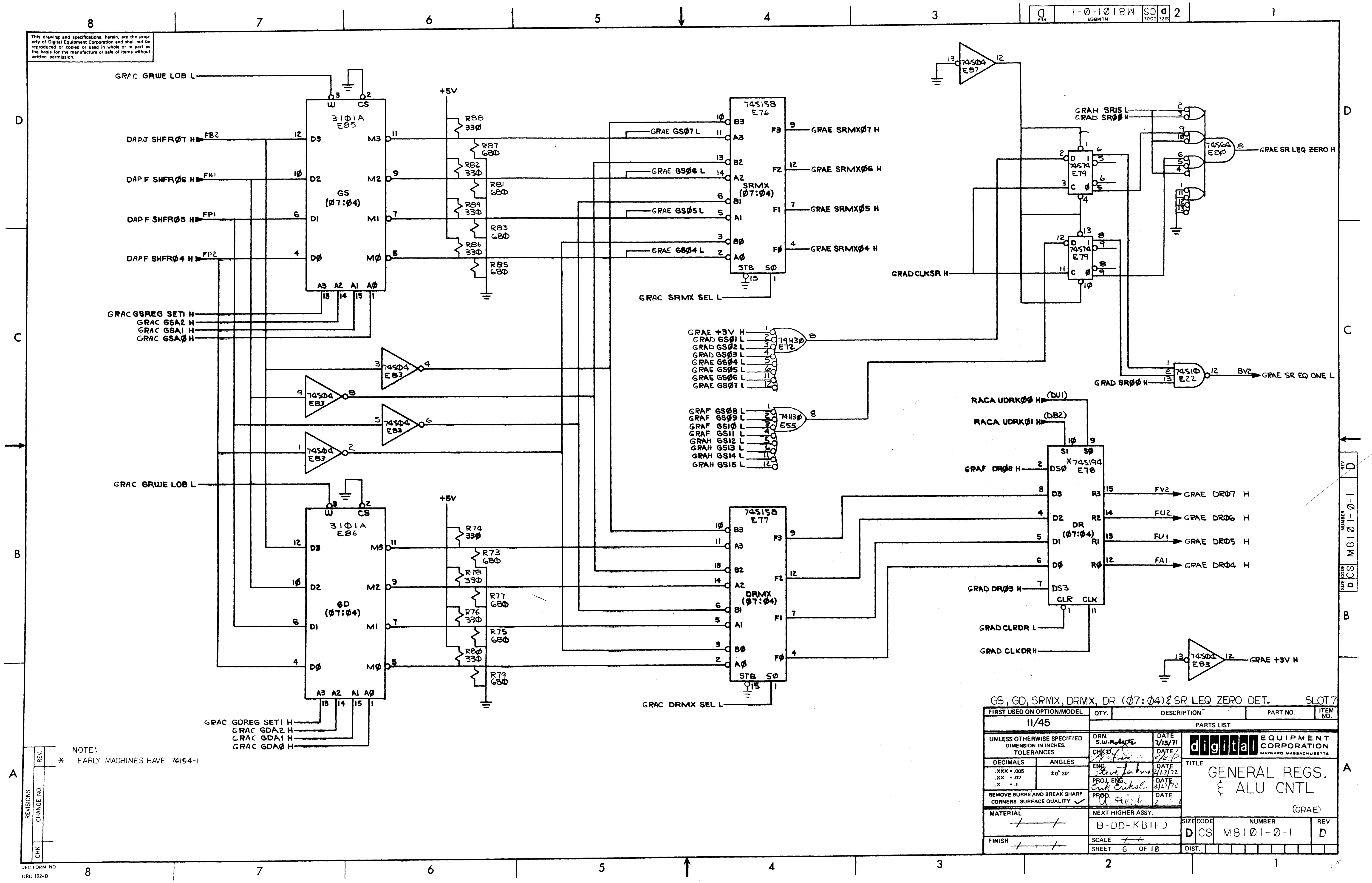
TITLE: GENERAL REGS. & ALU. CNTL (GRAD)

NEXT HIGHER ASSY.: B-DD-KB11-D

SIZE D CODE CS NUMBER M81Ø1-Ø-1 REV. D

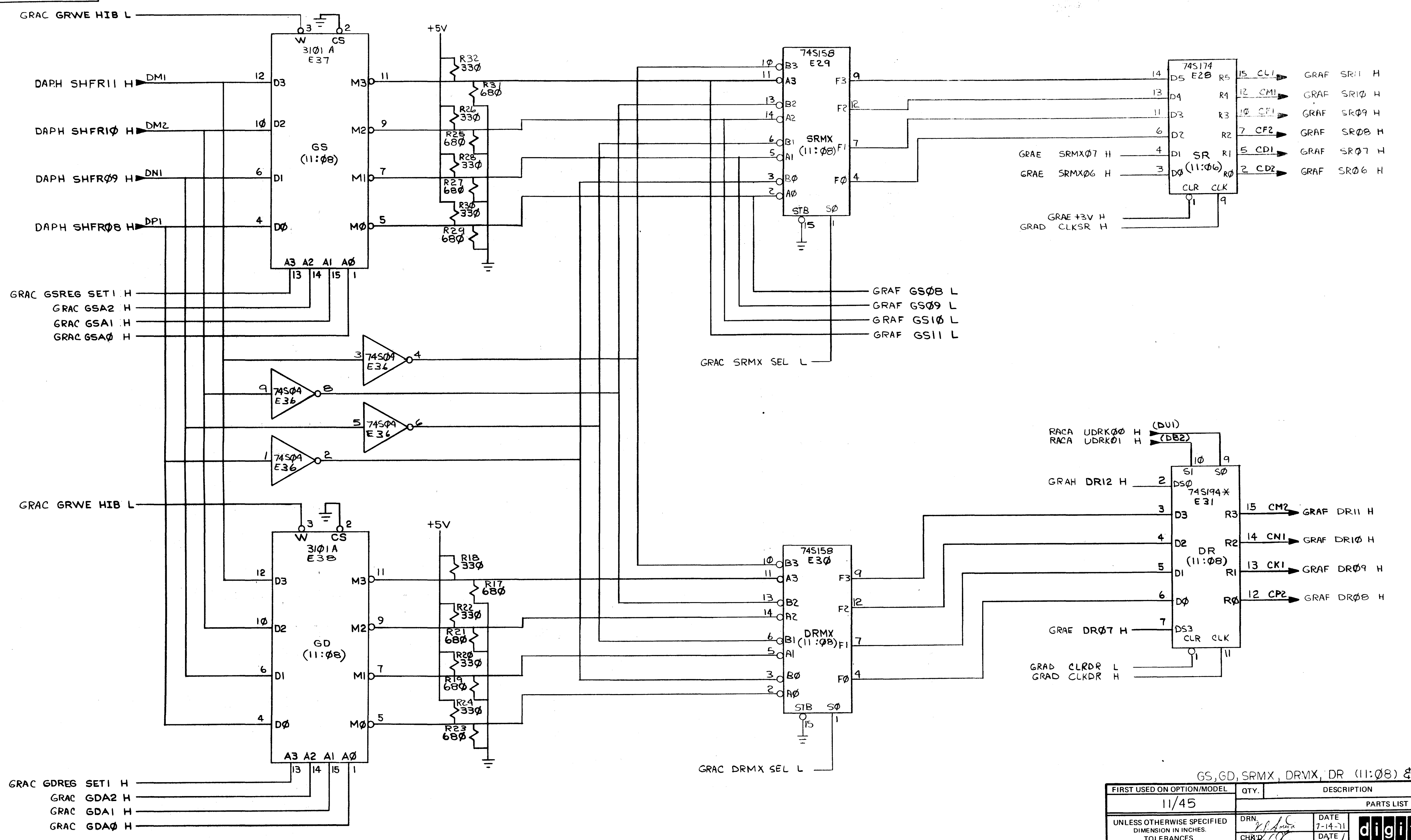
SCALE —//— SHEET 5 OF 1Ø

DEC FORM NO DRD 102-B



This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
GRAC GRWE LOB L
DAPJ SHFRØ7 H
DAPF SHFRØ6 H
DAPF SHFRØ5 H
DAPF SHFRØ4 H
3101A E85
GS (Ø7:Ø4)
GRAC GSREG SET1 H
GRAC GSA2 H
GRAC GSA1 H
GRAC GSAØ H
3101A E86
GD (Ø7:Ø4)
GRAC GDREG SET1 H
GRAC GDA2 H
GRAC GDA1 H
GRAC GDAØ H
+5V
74S04 E83
74S158 E76
SRMX (Ø7:Ø4)
GRAE GSØ7 L
GRAE GSØ6 L
GRAE GSØ5 L
GRAE GSØ4 L
GRAE SRMXØ7 H
GRAE SRMXØ6 H
GRAE SRMXØ5 H
GRAE SRMXØ4 H
GRAC SRMX SEL L
74S158 E77
DRMX (Ø7:Ø4)
GRAC DRMX SEL L
74S04 E87
GRAH SR15 L
GRAD SRØØ H
74S74 E79
74S64 E8Ø
GRAE SR LEQ ZERO H
GRAD CLKSR H
74H30 E72
74H30 E55
74S10 E22
GRAD SRØØ H
GRAE SR EQ ONE L
RACA UDRKØØ H
RACA UDRKØ1 H
*74S194 E78
DR (Ø7:Ø4)
GRAF DRØ8 H
GRAD DRØ3 H
GRAD CLRDR L
GRAD CLKDR H
GRAE DRØ7 H
GRAE DRØ6 H
GRAE DRØ5 H
GRAE DRØ4 H
GRAE +3V H
NOTE:
* EARLY MACHINES HAVE 74194-1
GS, GD, SRMX, DRMX, DR (Ø7:Ø4) & SR LEQ ZERO DET.
SLOT 7
FIRST USED ON OPTION/MODEL 11/45
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DRN. S.W. Roberts DATE 7/15/71
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE GENERAL REGS. & ALU CNTL (GRAE)
NEXT HIGHER ASSY. B-DD-KB11-D
SIZE D CODE CS NUMBER M8101-Ø-1 REV D
SHEET 6 OF 1Ø
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE:
* EARLY MACHINES HAVE 74194-1

GS, GD, SRMX, DRMX, DR (11:08) & SR (11:06) SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//— FINISH —//—

DRN. DATE 7-14-71 · CHK'D DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-D

SCALE —//— SHEET 7 OF 10

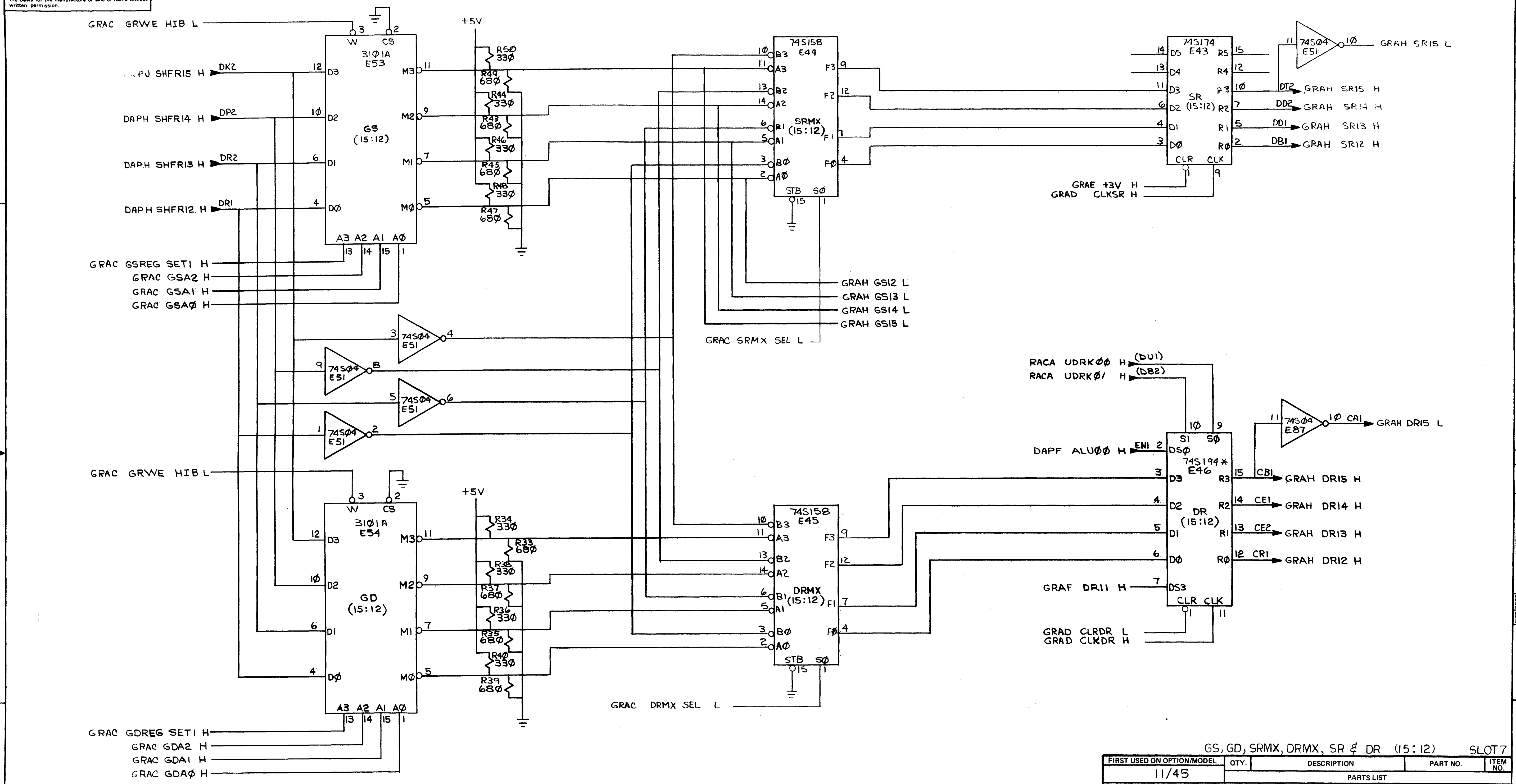
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE GENERAL REGS & ALU CNTL (GRAF)

SIZE D CODE CS NUMBER M8101-0-1 REV. D

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE:
* EARLY MACHINES HAVE 74194-1

GS, GD, SRMX, DRMX, SR & DR (15:12) SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL — //

FINISH — //

DRN. DATE 7-15-71

CHK'D DATE

ENG. DATE 2/23/72

PROJ. ENG. DATE 2/23/72

PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-J

SCALE — // —

SHEET 8 OF 10

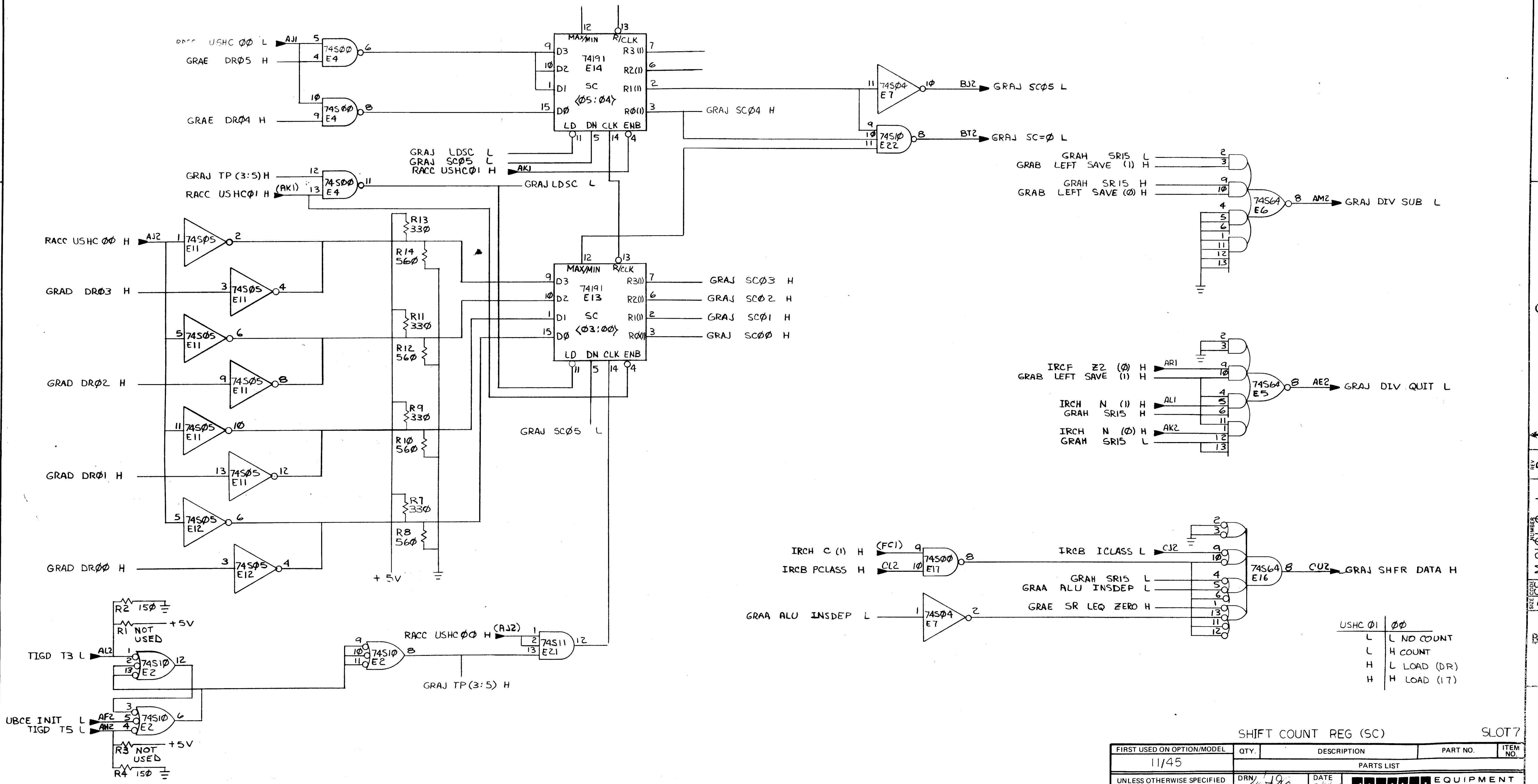
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE GENERAL REGS & ALU CNTL (GRAH)

SIZE D CODE CS NUMBER M 8101-Ø-1 REV. D

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




SHIFT COUNT REG (SC) SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN / CHKD / ENG / PROJ ENG / PROD — DATE 12/10/71

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: GENERAL REGS & ALU CNTL (GRAJ)

NEXT HIGHER ASSY. B-DD-KB11-0

SIZE D CODE CS NUMBER M81Ø1-Ø-1 REV. D

SCALE — SHEET 9 OF 1Ø DIST.

BRUNING 40-522 15840 · REVISIONS · CHANGE NO · REV · CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

## ALU CNTL ROM
DM8598-AD

| INSTRUCTION | OCTAL ADDRESS | ROMM M7 | ROMC M6 | ROMSHFS1 M5 | ROMSHFSØ M4 | ROMS3 M3 | ROMS2 M2 | ROMS1 M1 | ROMSØ MØ | INSTRUCTION DEP. ALU FUNCTION (RACC UALU (2:Ø)=7) | INSTRUCTION DEP. SHFR FUNCTION (RACC UALU (2:Ø)=7) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ROR.B | ØØ | L | L | H | H | L | L | L | L | F=A | RIGHT SHIFT |
| ROL.B | Ø1 | H | H | H | L | H | H | L | L | F=A PLUS A PLUS CBIT | NO - SHIFT ** |
| ASR.B | Ø2 | L | L | H | H | L | L | L | L | F=A | RIGHT SHIFT |
| ASL.B | Ø3 | L | L | H | L | H | H | L | L | F=A PLUS A | NO - SHIFT ** |
| MARK | Ø4 | L | L | L | L | L | L | L | L | NOT INST. DEP. | NOT INST. DEP. |
| MFP | Ø5 | H | L | H | L | H | L | H | L | F=B | NO - SHIFT |
| MTP | Ø6 | H | L | H | L | H | L | H | L | F=B | NO - SHIFT |
| SXT | Ø7 | H | L | H | L | L | L | H | H | N: F=MINUS 1 ; $\overline{N}$: F=Ø | NO - SHIFT |
| CLR.B | 1Ø | H | L | H | L | L | L | H | H | F=Ø | NO - SHIFT ** |
| COM.B | 11 | H | L | H | L | L | L | L | L | F=$\overline{A}$ | NO - SHIFT ** |
| INC.B | 12 | L | H | H | L | L | L | L | L | F=A PLUS 1 | NO - SHIFT ** |
| DEC.B | 13 | L | L | H | L | H | H | H | H | F=A MINUS 1 | NO - SHIFT ** |
| NEG.B | 14 | H | L | H | L | L | L | L | L | F=$\overline{A}$ | NO - SHIFT |
| ADC.B | 15 | H | H | H | L | L | L | L | L | F=A PLUS C BIT | NO - SHIFT ** |
| SBC.B | 16 | H | H | H | L | H | H | H | H | F=A MINUS C BIT | NO - SHIFT ** |
| TST.B | 17 | L | L | H | L | L | L | L | L | F=A | NO-- SHIFT ** |
| SUB | 2Ø | L | H | H | L | L | H | H | L | F=A MINUS B | NO - SHIFT |
| MOV.B | 21 | H | L | H | L | H | L | H | L | F=B | NO - SHIFT ** |
| CMP.B | 22 | L | L | H | L | L | H | H | L | F=A MINUS B MINUS 1 | NO - SHIFT ** |
| BIT.B | 23 | H | L | H | L | H | L | H | H | F=AB | NO - SHIFT ** |
| BIC.B | 24 | H | L | H | L | L | H | H | H | F=AB | NO - SHIFT ** |
| BIS.B | 25 | H | L | H | L | H | H | H | L | F=A+B | NO - SHIFT ** |
| ADD | 26 | L | L | H | L | H | L | L | H | F=A PLUS B | NO - SHIFT |
| ———— | 27 | L | L | L | L | L | L | L | L | ———— | ———— |
| MUL | 3Ø | L | H | H | H | L | H | H | L | F=A MINUS B | RIGHT SHIFT |
| DIV | 31 | L | H | H | L | H | H | L | L | F=A PLUS A PLUS DR15 | NO - SHIFT |
| ASH | 32 | L | L | L | H | L | L | L | L | NOT INST. DEP. | NOT INST. DEP. * |
| ASHC | 33 | L | H | H | L | H | H | L | L | F=A PLUS A PLUS DR15 | NO - SHIFT |
| XOR | 34 | H | L | H | L | L | H | H | L | F=A ⊻ B | NO - SHIFT |
| ———— | 35 | L | L | L | L | L | L | L | L | ———— | ———— |
| ———— | 36 | L | L | L | L | L | L | L | L | ———— | ———— |
| SOB | 37 | L | L | L | L | L | L | L | L | NOT INST. DEP. | NOT INST. DEP. |
| | | | | | | | | | SWAB | F=A | SWAP BYTES |

NOTE: SWAB INST. HAS SAME ROM ADDRESS AS ASL.B
*ROMSHF OUTPUTS USED TO DECODE ASH
**ODD BYTE*BYTE INSTR: SWAP BYTES

ALU CNTL ROM MAP SLOT 7

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. DATE CHKD. DATE ENG. DATE PROJ. ENG. DATE PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE GENERAL REGS. & ALU CNTL (GRAK)

NEXT HIGHER ASSY B-DD-KB11-0

SIZE D CODE CS NUMBER M8171-Ø-1 REV. D

SCALE NONE

SHEET 1Ø OF 1Ø

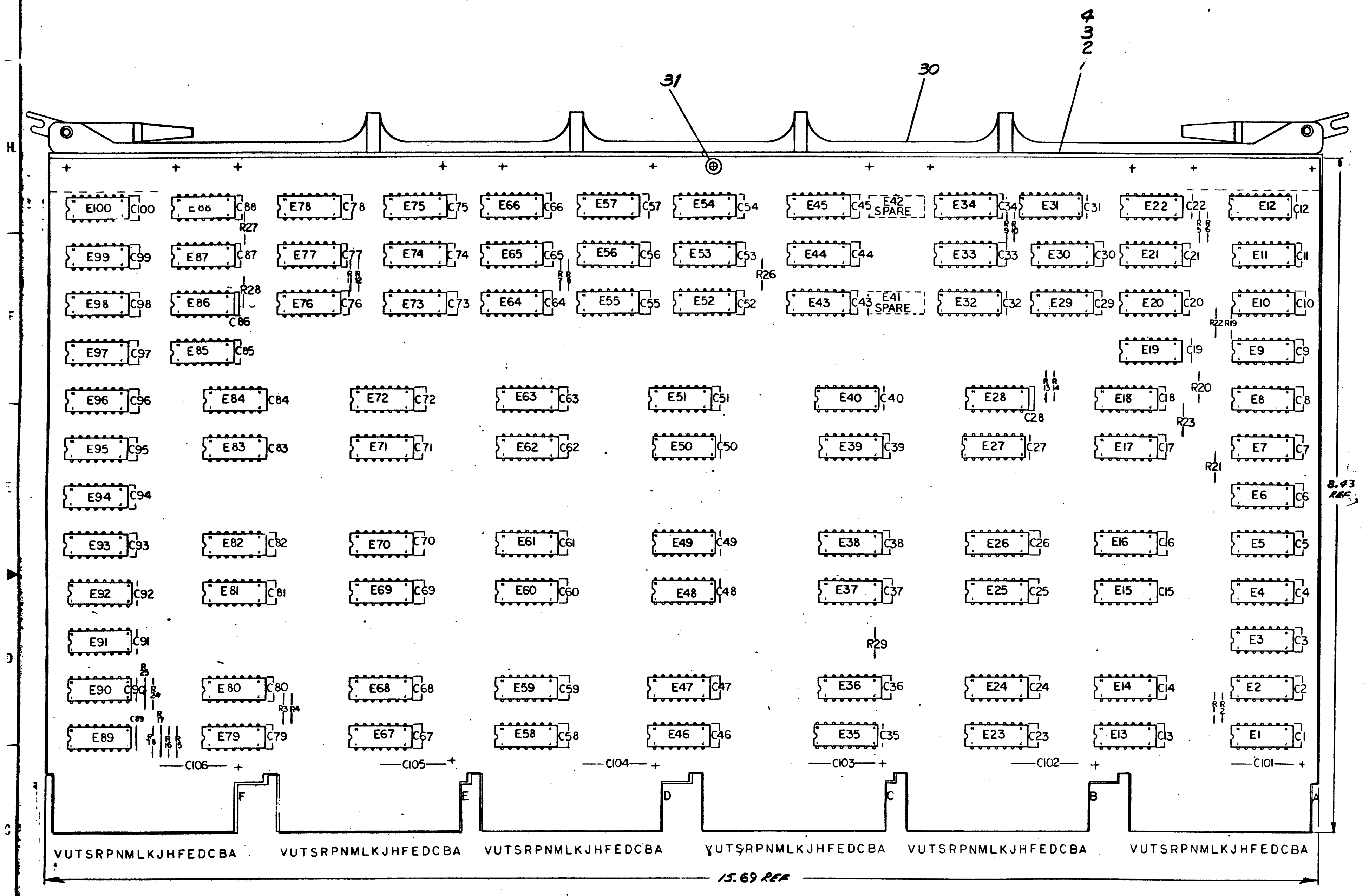
DIST.

REVISIONS CHANGE NO REV CHK

BRUNING 40-522 15840

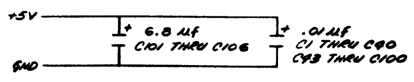
DEC FORM NO DRD 102-B

1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS WITHOUT VALUE NOTED ARE .01 MFD.
2. RESISTORS R1, R12, R14 ARE NOT USED.




AA2, AV1, BA2, BV1,
CA2, CV1, DA2, DV1,
EA2, EV1, FA2, FV1

AC2, AN2, AH1, AT1,
BC2, BN2, BH1, BT1,
CC2, CN2, CH1, CT1,
DC2, DN2, DH1, DT1,
EC2, EN2, EH1, ET1,
FC2, FN2, FH1, FT1




| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO |
|---|---|---|---|---|
| 12 | | EYELET | 9006732 | 31 |
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 30 |
| 1 | E90 | I.C. DM 8598-AC | 23-C02A1 | 29 |
| 1 | E89 | I.C. DM 8598-AB | 23-C01A1 | 28 |
| 2 | E44, E69 | I.C. DEC 8885 | 1910649 | 27 |
| 1 | E47 | I.C. DEC 8875 | 1910647 | 26 |
| 5 | E27, E32, E48, E49, E50 | I.C. DEC 8251-1 | 1909854 | 25 |
| 3 | E51, E80, E85 | I.C. DEC 74H50 | 1909060 | 24 |
| 2 | E35, E40 | I.C. DEC 74S157 | 1910548 | 23 |
| 4 | E12, E31, E91, E92 | I.C. DEC 74S153 | 1910547 | 22 |
| 11 | E13, E14, E15, E16, E23, E24, E25, E26, E73, E79, E99 | I.C. DEC 74S74 | 1910544 | 21 |
| 5 | E20, E54, E57, E65, E66 | I.C. DEC 74S65 | 1910543 | 20 |
| 10 | E1, E5, E61, E63, E77, E81, E82, E83, E84, E88 | I.C. DEC 74S64 | 1910542 | 19 |
| 1 | E2 | I.C. DEC 74S40 | 1910541 | 18 |
| 6 | E7, E9, E18, E67, E70, E96 | I.C. DEC 74S20 | 1910539 | 17 |
| 16 | E4, E6, E10, E22, E29, E46, E56, E59, E60, E71, E72, E75, E76, E78, E86, E99 | I.C. DEC. 74S11 | 1910537 | 16 |
| 9 | E28, E33, E38, E53, E58, E74, E95, E98, E100 | I.C. DEC 74S10 | 1910536 | 15 |
| 8 | E3, E17, E30, E43, E68, E87, E97 E45 | I.C DEC 74S04 | 1910534 | 14 |
| 1 | E34 | I.C. DEC 74S03 | 1910533 | 13 |
| 12 | E8, E11, E19, E21, E36, E37, E39, E52, E55, E62, E64, E93 | I.C. DEC 74S00 | 1910532 | 12 |
| 5 | R15 THRU R19 | RES. 1K, 1/4 W, 5% | 1300365 | 11 |
| 4 | R3, R6, R7, R10 | RES. 560, 1/4 W, 5% | 1301890 | 10 |
| 10 | R20 THRU R29 | RES. 470, 1/4 W, 5% | 1300316 | 9 |
| 4 | R4, R5, R8, R9 | RES. 330, 1/4 W, 5% | 1300295 | 8 |
| 3 | R2, R11, R13 | RES. 150, 1/4 W, 5% | 1300250 | 7 |
| 98 | C1 THRU C40, C43 THRU C100 | CAP. .01 MFD, 100 V, 20% DISC | 1001610 | 6 |
| 6 | C101 THRU C106 | CAP 6.8 MFD, 35V, 20% STANT | 1000067 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009806 | 4 |
| REF | | MODULE ECO HISTORY | B-AH-M8102-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M8102-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8102-0-4 | 1 |

PARTS LIST

ETCH BOARD REV C

| IC TYPE | GND | +5V |
|---|---|---|
| DM 8598-AC | 8 | 16 |
| DM 8598-AB | 8 | 16 |
| DEC 8251-1 | 8 | 16 |
| DEC 74S153 | 8 | 16 |
| DEC 74S157 | 8 | 16 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

DEC FORM NO. DRE 104

| REV | CHANGE NO. | ORIGINATED | | |
|---|---|---|---|---|
| A | M8102-00001 | ORIGINATED | S JENKINS 3/6/72 | |
| B | | | S JENKINS 3/14/72 | |
| C | M802-00002 | | B J HAILE | S JENKINS 7-[illegible]-72 |

REVISIONS

| DEC NO | EIA NO. | DEC NO. | EIA NO |
|---|---|---|---|

SEMICONDUCTOR CONVERSION CHART

DRN [illegible] DATE 2-16-72
CHK'D [illegible] DATE [illegible]/72
ENG [illegible] DATE [illegible]/72
PROJ. ENG [illegible] DATE [illegible]/72
PROD [illegible] DATE [illegible]
NEXT HIGHER ASSY B-DD-KB11-0
SCALE 2/1
SHEET 1 OF 9

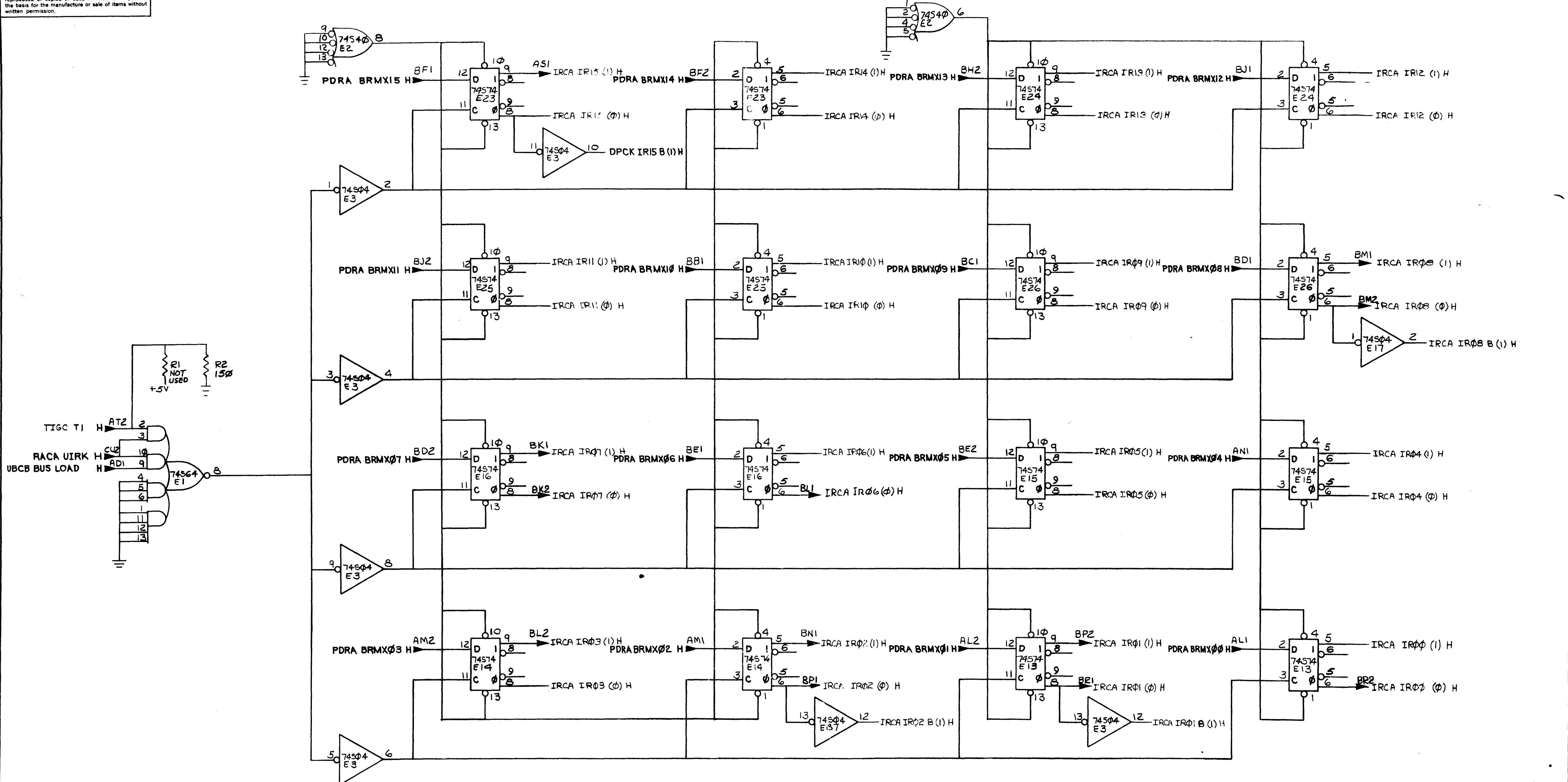
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE IR DECODE & COND. CODES

SIZE E CODE CS NUMBER M8102-0-1 REV. C

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




INSTRUCTION REG. SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

| | | DATE |
|---|---|---|
| DRN. | S.W. Roberts | 6/24/71 |
| CHK'D. | [signature] | 2/18/72 |
| ENG. | [signature] | 2/18/72 |
| PROJ. ENG. | FRIK ERICKSEN | 2/18/72 |
| PROD. | [signature] | 2/23/72 |

NEXT HIGHER ASSY. B-DD-KB11-0

SCALE / /

SHEET 2 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

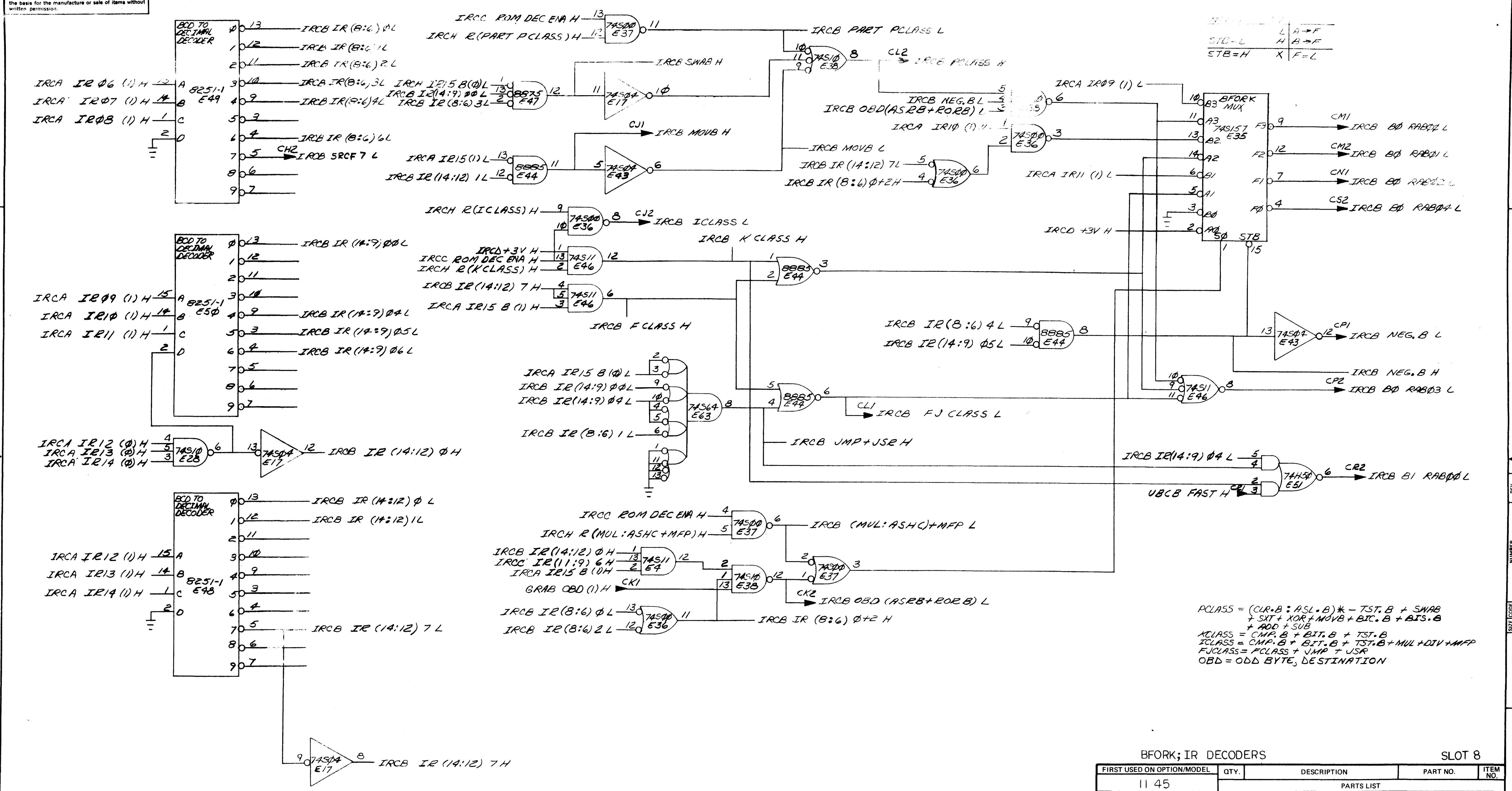
TITLE IR DECODE & COND. CODES (IRCA)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8102-Ø-1 | C |

DIST.

REVISIONS: REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B




L | A→F
STB=L H | B→F
STB=H X | F=L

PCLASS = (CLR.B : ASL.B)* − TST.B + SWAB + SXT + XOR + MOVB + BIC.B + BIS.B + ADD + SUB
KCLASS = CMP.B + BIT.B + TST.B
ICLASS = CMP.B + BIT.B + TST.B + MUL + DIV + MFP
FJCLASS = FCLASS + JMP + JSR
OBD = ODD BYTE, DESTINATION

BFORK; IR DECODERS SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11 45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DATE 6-22-72 · 2/18/72 · 2/18/72 · 2/18/72 · 2/23/72
PROJ. ENG. ERIK ERICKSEN

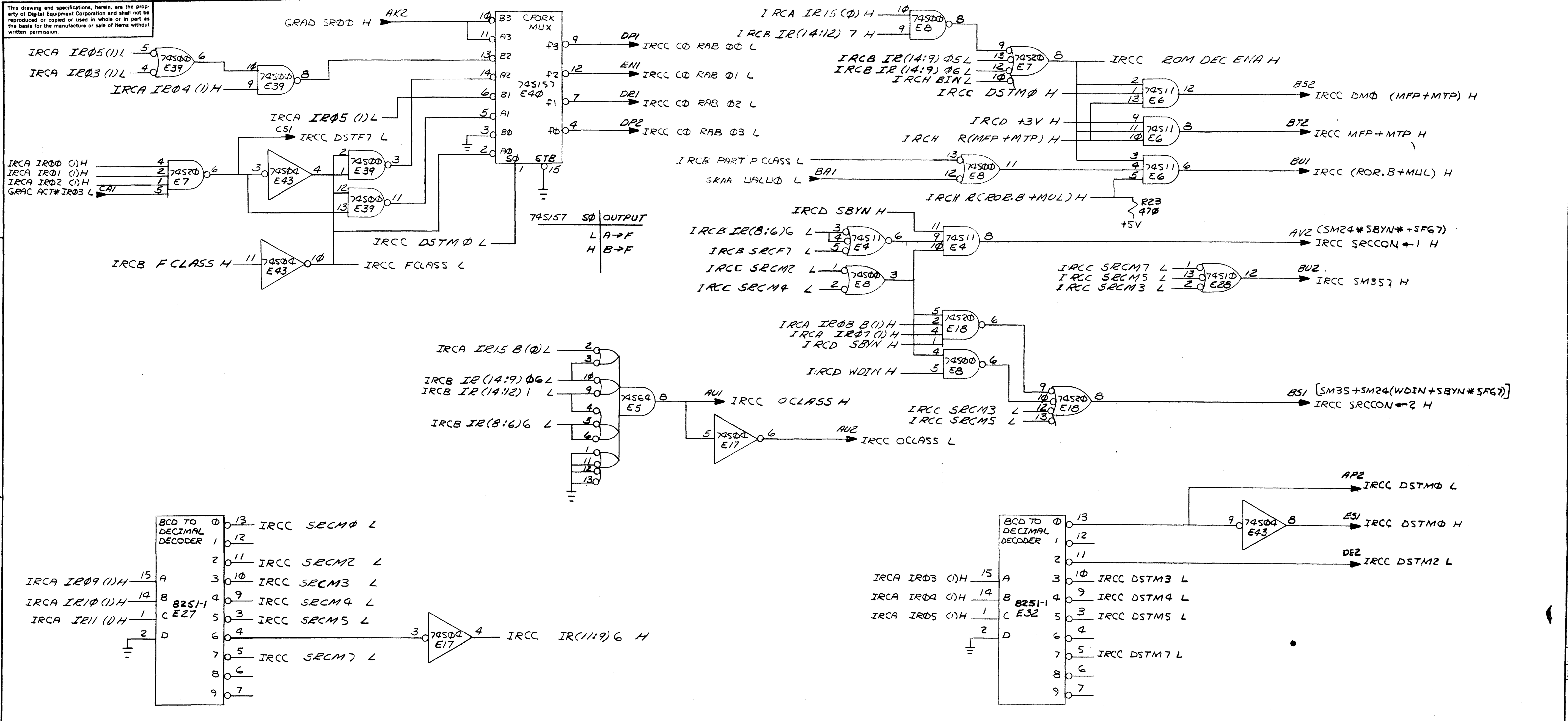
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: IR DECODE & COND. CODES (IRCB)

NEXT HIGHER ASSY. B-DD-KB11-0
SIZE D CODE CS NUMBER M8102-0-1 REV. C
SCALE — SHEET 3 OF 9

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE: OCLASS = MOV + MTP
SBYN = MOVB + CMPB + BITB + BICB + BISB
SR00 = OBS (ODD BYTE, SOURCE)
FCLASS = FPU OPCODES

CFORK; IR DECODERS; SOURCE CONSTANTS — SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. [signature] DATE 6-23-71
CHKD. [signature] DATE 2/10/72
ENG. [signature] DATE 2/16/72
PROJ. ENG. ERIK ERIKSEN DATE 2/16/72
PROD. [signature] DATE 2/23/72
NEXT HIGHER ASSY. B-DD-KB11-D
SCALE —
SHEET 4 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

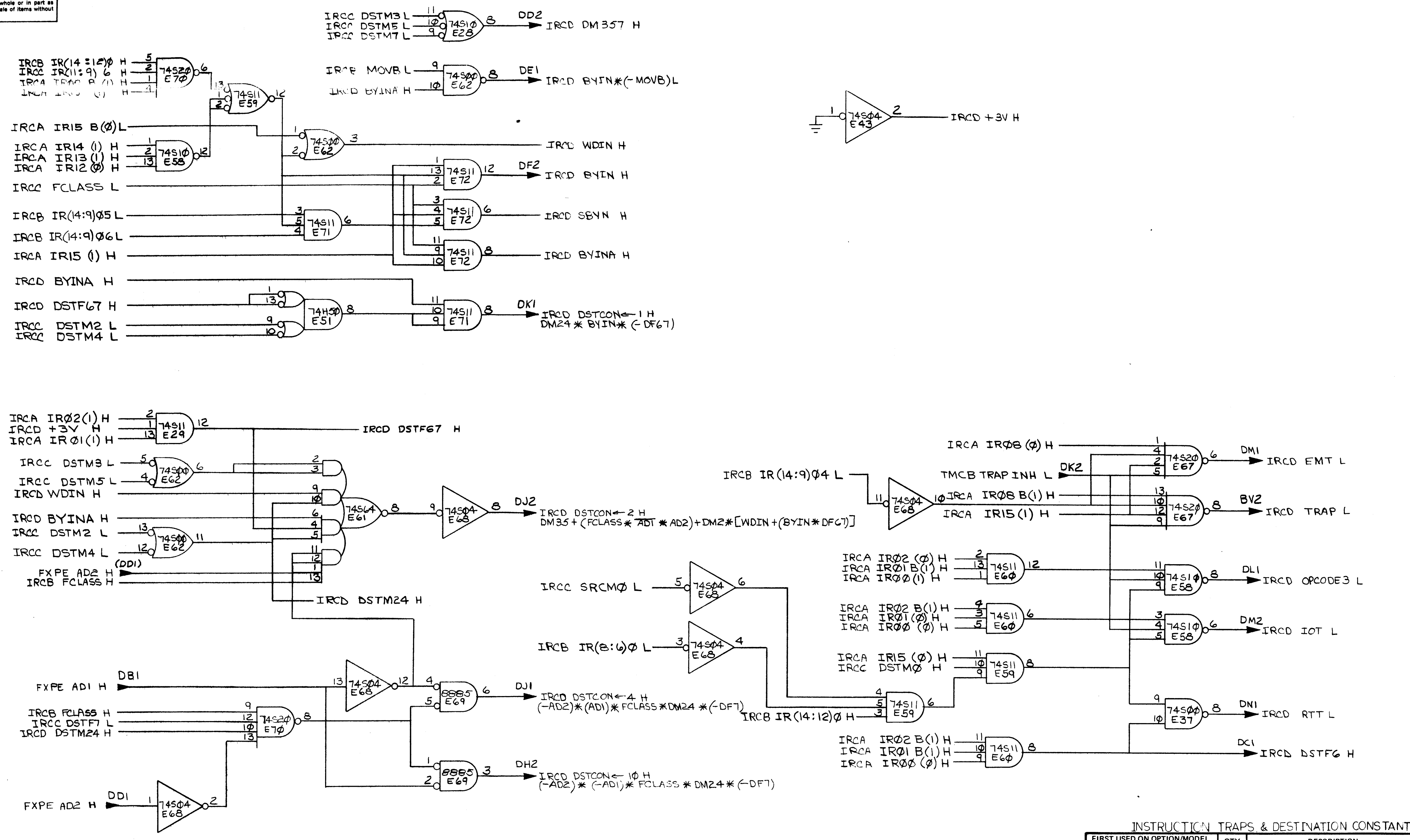
TITLE IR DECODE & COND. CODES (IRCC)

SIZE D CODE CS NUMBER M8102-0-1 REV C

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




INSTRUCTION TRAPS & DESTINATION CONSTANTS — SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL — FINISH

DRN. / CHK'D. / ENG. / PROJ. ENG. / PROD. — DATE

digital EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

TITLE: IR DECODE & COND. CODES (IRCD)

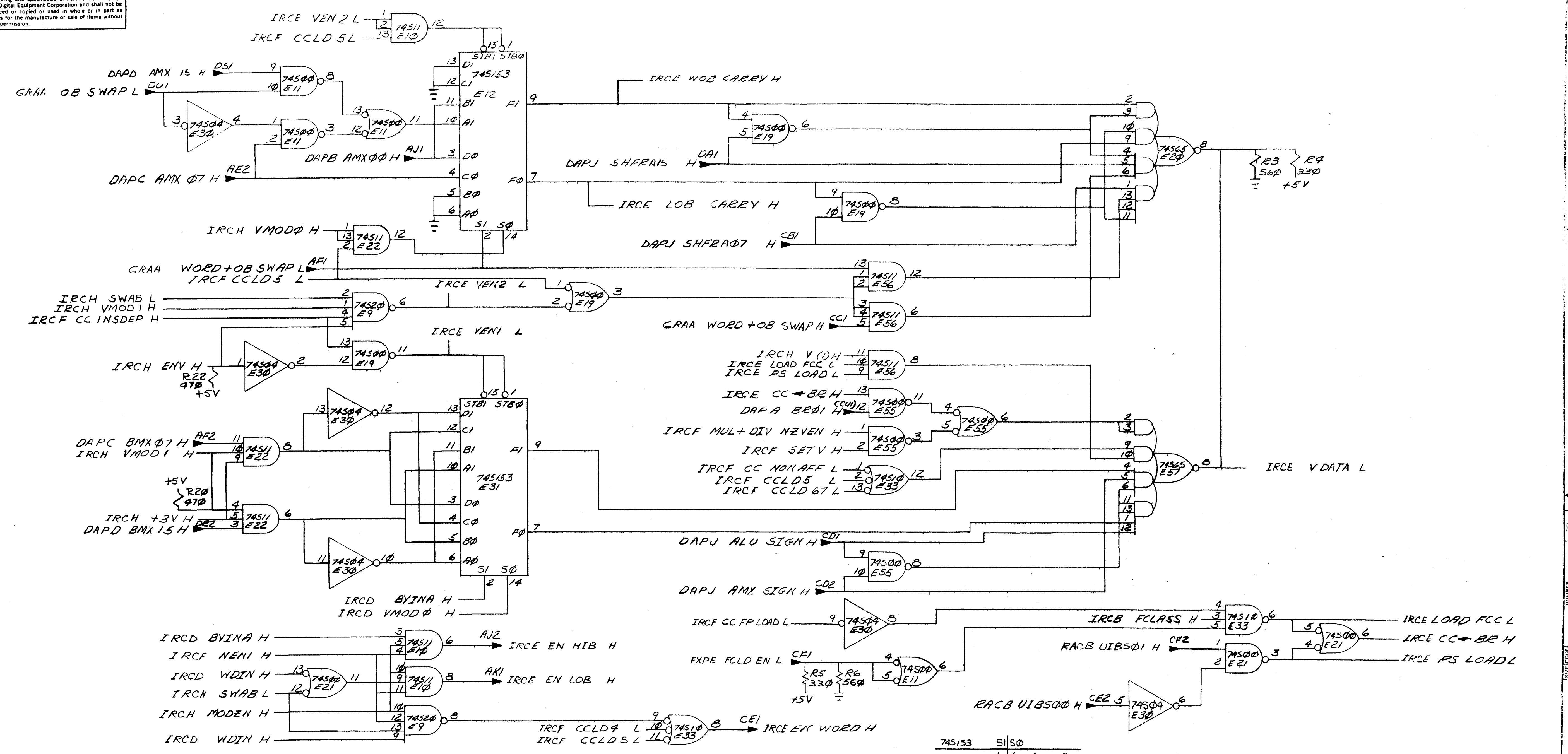
NEXT HIGHER ASSY.: B-DD-KB11-D

SIZE: D — CODE: CS — NUMBER: M8102-0-1 — REV.: C

SHEET 5 OF 9

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| 74S153 | S1 | S0 | |
|---|---|---|---|
| STB L | L | L | A→F |
| | L | H | B→F |
| | H | L | C→F |
| | H | H | D→F |
| STB H | X | X | F = L |

CONDITION CODE V LOGIC SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL

FINISH

DRN. DATE 6-17-71

CHK'D DATE

ENG. DATE

PROJ. ENG. DATE

PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-O

SCALE

SHEET 6 OF 9

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE IR DECODE & COND. CODES (IRCE)

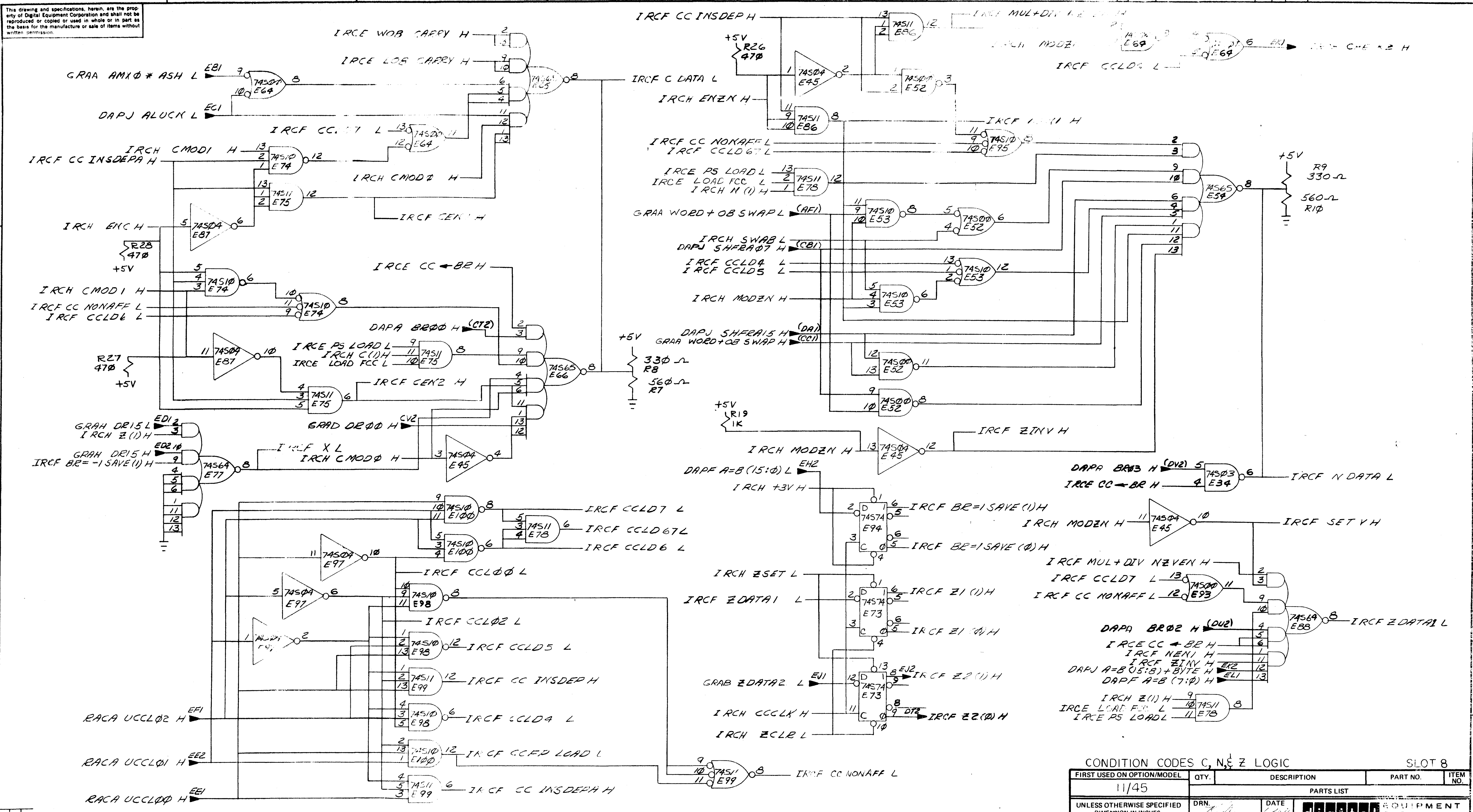
SIZE D CODE CS NUMBER M 8102-0-1 REV. C

DIST.

REVISIONS REV. CHANGE NO. CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




CONDITION CODES C, N, & Z LOGIC

SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. | DATE
CHK'D. | DATE
ENG. | DATE
PROJ. ENG. | DATE
PROD. | DATE

NEXT HIGHER ASSY. B-DD-KB11-D

SCALE

SHEET 7 OF 9

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE IR DECODE & COND. CODES (IRCF)

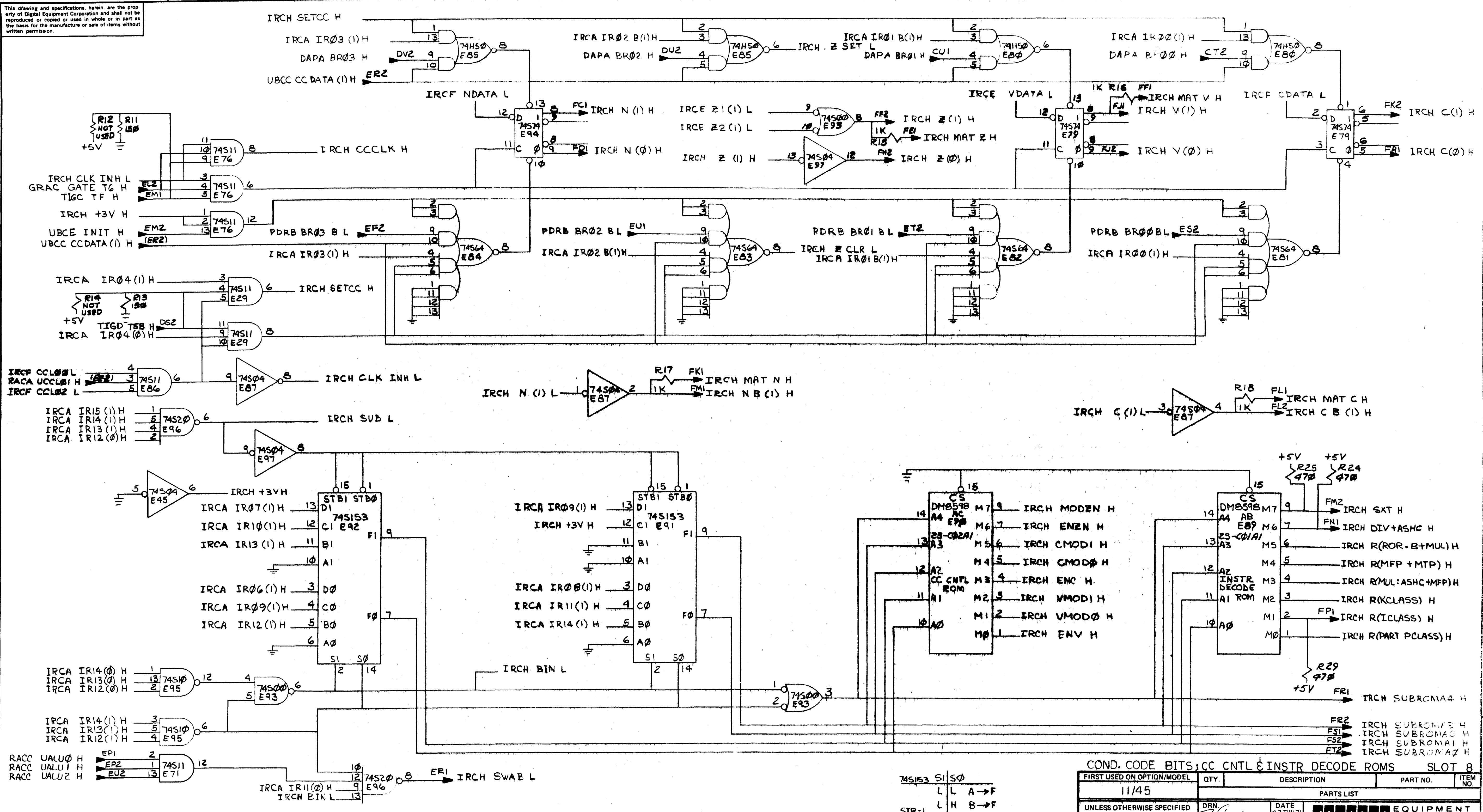
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M 81Ø2-Ø-1 | C |

DIST.

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| 74S153 | S1 | SØ | |
|---|---|---|---|
| STB=L | L | L | A→F |
| | L | H | B→F |
| | H | L | C→F |
| | H | H | D→F |
| STB=H | X | X | F=L |

COND. CODE BITS: CC CNTL & INSTR DECODE ROMS SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN. DATE 23 JUN 71
CHK'D DATE 2/18/72
ENG. DATE 2/18/72
PROJ. ENG. DATE 2/18/72
PROD. DATE 2/23/72

NEXT HIGHER ASSY. B-DD-KB11-0

SCALE

SHEET 8 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE IR DECODE & COND. CODES (IRCH)

SIZE D CODE CS NUMBER M 81Ø2-Ø-1 REV. C

DIST.

REVISIONS | REV | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

| INSTRUCTION | OCTAL ADDRESS |
|---|---|
| ROR.B | ØØ |
| ROL.B | Ø1 |
| ASR.B | Ø2 |
| ASL.B | Ø3 |
| MARK | Ø4 |
| MFP | Ø5 |
| MTP | Ø6 |
| SXT | Ø7 |
| CLR.B | 1Ø |
| COM.B | 11 |
| INC.B | 12 |
| DEC.B | 13 |
| NEG.B | 14 |
| ADC.B | 15 |
| SBC.B | 16 |
| TST.B | 17 |
| SUB | 2Ø |
| MOV.B | 21 |
| CMP.B | 22 |
| BIT.B | 23 |
| BIC.B | 24 |
| BIS.B | 25 |
| ADD | 26 |
| NOT USED | 27 |
| MUL | 3Ø |
| DIV | 31 |
| ASH | 32 |
| ASHC | 33 |
| XOR | 34 |
| NOT USED | 35 |
| NOT USED | 36 |
| SOB | 37 |

**INSTRUCTION DECODE ROM DM8598/AB**

| SXT | DIV+ASHC | R(ROB.B+MUL) | R(MFP+MTP) | R(MUL:ASHC+MFP) | R(K CLASS) | R(I CLASS) | R(PART P CLASS) |
|---|---|---|---|---|---|---|---|
| M7 | M6 | M5 | M4 | M3 | M2 | M1 | MØ |
| L | L | H | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | L |
| L | L | L | H | H | L | H | L |
| L | L | L | H | L | L | L | L |
| H | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | H | H | L |
| L | L | L | L | L | L | L | H |
| L | L | L | [illegible] | L | L | L | L |
| L | L | L | L | L | H | H | L |
| L | L | L | L | L | H | H | L |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | L |
| L | L | H | L | H | L | H | L |
| L | H | L | L | H | L | H | L |
| L | L | L | L | H | L | L | L |
| L | H | L | L | H | L | L | L |
| L | L | L | L | L | L | L | H |
| L | L | L | L | L | L | L | L |
| L | L | L | L | L | L | L | L |
| L | L | L | L | L | L | L | L |

**COND. CODE CNTL. ROM DM8598/AC**

| MOD ZN | EN ZN | CMOD 1 | CMOD Ø | ENC | VMOD 1 | VMODØ | ENV |
|---|---|---|---|---|---|---|---|
| M7 | M6 | M5 | M4 | M3 | M2 | M1 | MØ |
| H | H | L | L | L | H | H | H |
| H | H | L | L | L | H | L | H |
| H | H | L | L | L | H | H | H |
| H | H | L | L | L | H | L | H |
| L | L | L | L | L | L | L | L |
| H | H | H | L | H | L | L | H |
| H | H | H | L | H | L | L | H |
| H | H | H | L | H | L | L | H |
| H | H | H | L | L | L | L | H |
| H | H | L | H | L | L | L | H |
| H | H | H | L | H | L | L | L |
| H | H | H | L | H | L | H | L |
| H | H | L | H | L | H | L | L |
| H | H | H | L | L | L | L | L |
| H | H | L | H | L | L | H | L |
| H | H | H | L | L | L | L | H |
| H | H | L | H | L | H | H | L |
| H | H | H | L | H | L | L | H |
| L | H | H | L | L | H | H | L |
| H | H | H | L | H | L | L | H |
| H | H | H | L | H | L | L | H |
| H | H | H | L | H | L | L | H |
| H | H | H | L | L | H | L | L |
| L | L | L | L | L | L | L | L |
| H | L | L | H | H | L | L | H |
| L | L | H | H | L | L | L | H |
| H | H | H | L | L | L | L | H |
| H | H | L | L | H | L | L | H |
| H | H | H | L | H | L | L | H |
| L | L | L | L | L | L | L | L |
| L | L | L | L | L | L | L | L |
| L | L | L | L | L | L | L | L |

SWAB

CCLD4 (RACC UCCL(2:Ø)=4)
CCLD5 (RACC UCCL(2:Ø)=5)
CCLD6 (RACC UCCL(2:Ø)=6)
CCLD7 (RACC UCCL(2:Ø)=7)

**INSTRUCTION DEPENDENT CONTROL (RACA UCCL (2:Ø)=1)**

| N | | Z | | V | | C | |
|---|---|---|---|---|---|---|---|
| WORD + ODD BYTE | BYTE *(EVEN + DSTMØ) | WORD | BYTE | WORD | BYTE | WORD | BYTE |
| * SHFR (15)1 | ; SHFR (7)1 | SHFR(15:Ø)Ø | SHFR(7:Ø)Ø | SHFR15 ⊻ AMX Ø | SHFR7 ⊻ AMXØ | AMXØ | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | SHFR15 ⊻ AMX15 | SHFR15 ⊻ AMX7 ; SHFR7 ⊻ AMX7 | AMX15 | AMX7 |
| * SHFR(15)1 | ; SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(7:Ø)Ø | SHFR15 ⊻ AMXØ | SHFR7 ⊻ AMXØ | AMXØ | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | SHFR15 ⊻ AMX15 | SHER15 ⊻ AMX7 ; SHFR7 ⊻ AMX7 | AMX15 | AMX7 |
| NOT INSTR. DEP. | | NOT INSTR. DEP. | | NOT INSRT. DEP. | | NOT INSRT. DEP. | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | NOT AFFECTED | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | NOT AFFECTED | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | NOT AFFECTED | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | ALUCOUT 15 | ALUCOUT 7 |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | $\overline{ALUCOUT\ 15}$ | $\overline{ALUCOUT\ 7}$ |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | $\overline{AMX15}$ * ALU15 | $\overline{AMX7}$ * ALU7 | NOT AFFECTED | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | AMX15 * $\overline{ALU15}$ | AMX7 * $\overline{ALU7}$ | NOT AFFECTED | |
| * SHFR(15)1 | ; SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(7:Ø)Ø | A15*B15*ALU15 + $\overline{A15*B15}$*ALU15 | A7*B7*$\overline{ALU7}$ + $\overline{A7*B7}$*ALU7 | $\overline{ALUCOUT\ 15}$ | $\overline{ALUCOUT\ 7}$ |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | $\overline{AMX15}$ * ALU15 | $\overline{AMX7}$ * ALU7 | ALUCOUT 15 | ALUCOUT 7 |
| SHER (15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | AMX15 * $\overline{ALU15}$ | AMX7 * $\overline{ALU7}$ | $\overline{ALUCOUT\ 15}$ | $\overline{ALUCOUT\ 7}$ |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | ALUCOUT 15 | ALUCOUT 7 |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | AMX15*BMX15*$\overline{ALU15}$ + $\overline{AMX15}$*$\overline{BMX15}$*ALU15 | | $\overline{ALUCOUT\ 15}$ | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | NOT AFFECTED | |
| SHFR(15)Ø | SHFR(7)Ø | A=B(15:Ø) | A=B(7:Ø) | A15*$\overline{B15}$*$\overline{ALU15}$ + $\overline{A15}$*B15*ALU15 | A7*$\overline{B7}$*$\overline{ALU7}$ + $\overline{A7}$*B7*ALU7 | ALUCOUT 15 | ALUCOUT 7 |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | NOT AFFECTED | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | NOT AFFECTED | |
| SHFR(15)1 | SHFR(7)1 | SHFR(15:Ø)Ø | SHFR(BYTE)Ø | Ø | | NOT AFFECTED | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | AMX15*BMX15*$\overline{ALU15}$ + $\overline{AMX15}$*$\overline{BMX15}$*ALU15 | | ALUCOUT 15 | |
| ——— | | ——— | | ——— | | ——— | |
| NOT AFFECTED | | Z(OLD) * SHFR(15:Ø)Ø | | Ø | | $\overline{X}$ | |
| NOT AFFECTED | | 1 | | 1 | | 1(ALUCN + $\overline{ALUCN}$) | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | AMXØ | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | DRØØ | |
| SHFR(15)1 | | SHFR(15:Ø)Ø | | Ø | | NOT AFFECTED | |
| ——— | | ——— | | ——— | | ——— | |
| ——— | | ——— | | ——— | | ——— | |
| NOT INSTR. DEP | | NOT INSTR. DEP. | | NOT INSTR DEP. | | NOT INSTR. DEP. | |
| SHFR(7)1 | | SHFR(7:Ø)Ø | | Ø | | Ø | |

| N | Z | V | C |
|---|---|---|---|
| SHFR(15)1 | SHFR(15:Ø)Ø | Ø | Ø |
| SHFR(15)1 | SHFR(15:Ø)Ø | V(OLD) + (SHFR15 ⊻ AMX15) | AMX15 |
| NOT AFFECTED | Z(OLD) * SHFR(15:Ø)Ø | NOT AFFECTED | NOT AFFECTED |
| NOT AFFECTED | NOT AFFECTED | NOT AFFECTED | ALUOUT 15 |

* ODD BYTE SWAPPED TO EVEN DURING COND. CODE CHECKING

NOTE: BYTE INSTRUCTION WITH DSTMØ IS ALWAYS EVEN BYTE

X = Z(OLD) * $\overline{DR15}$ + (SR=Ø) * DR15

SWAB INSTR. HAS SAME ROM ADDRESS AS ASL.B

CC CNTL & INSTR DECODE ROM MAPS — SLOT 8

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | PARTS LIST | | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL: —/—/—
FINISH: —/—/—

DRN. A Kilbert — DATE 1-20-72
CHK'D. — DATE 2/16/72
ENG. — DATE 2/14/72
PROJ. ENG. ERIK ERIKSEN — DATE 2/18/72
PROD. — DATE 2/23/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: IR DECODE & COND. CODES (IRCJ)

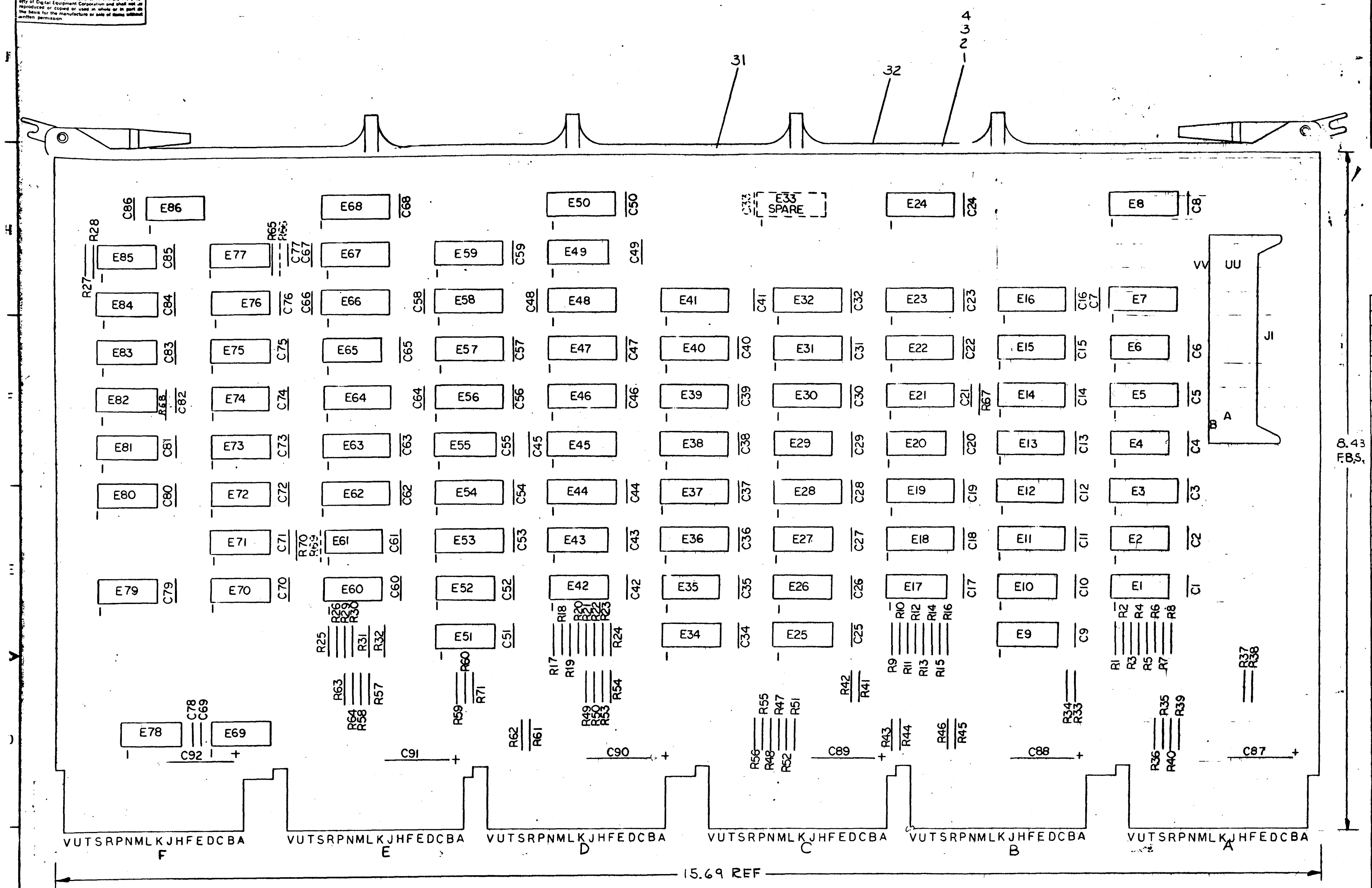
NEXT HIGHER ASSY: B-DD-KB11-0

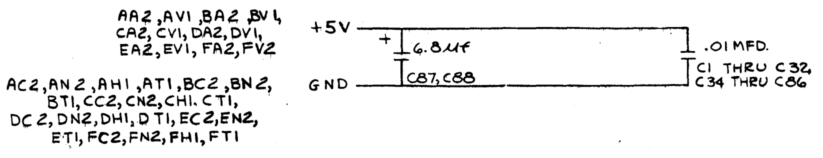
SIZE D — CODE CS — NUMBER M8102-0-1 — REV. C

SCALE NONE — SHEET 9 OF 9 — DIST.

REVISIONS — REV — CHANGE NO — CHK

NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED .01 MFD.




| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 32 |
| 12 | | EYELET | 9006732 | 31 |
| 1 | J1 | CONN 40PIN BERG | 1209941 | 30 |
| 2 | E47, E59 | IC DEC 74175 | 1910651 | 29 |
| 4 | E8, E24, E50, E68 | IC DEC 7485 | 1910224 | 28 |
| 12 | E11, E13, E15, E18, E22, E36, E38, E45, E53, E57, E63, E67 | IC DEC 74S174 | 1910550 | 27 |
| 1 | E31 | IC DEC 74S157 | 1910548 | 26 |
| 24 | E3, E5, E7, E12, E14, E16, E19, E21, E23, E28 E30, E32, E37, E39, E41, E44 E46, E48, E54, E56, E58, E62, E64, E66 | IC DEC 74S153 | 1910547 | 25 |
| 7 | E6, E49, E69, E80, E82, E83, E85 | IC DEC 74S74 | 1910544 | 24 |
| 1 | E79 | IC DEC 74S40 | 1910541 | 23 |
| 1 | E71 | IC DEC 74S20 | 1910539 | 22 |
| 8 | E4, E10, E29, E35, E52, E55, E65 E75 | IC DEC 74S04 | 1910534 | 21 |
| 2 | E20, E77 | IC DEC 74S11 | 1910537 | 20 |
| 3 | E70, E73, E86 | IC DEC 74S10 | 1910536 | 19 |
| 1 | E72 | IC DEC 74S00 | 1910532 | 18 |
| 1 | E40 | IC DEC 9318 | 1910454 | 17 |
| 8 | E9, E17, E25, E34, E51, E78, E81, E84 | IC DEC 74H01 | 1909849 | 16 |
| 4 | E1, E26, E42, E60 | IC DEC 8881 | 1909705 | 15 |
| 4 | E2, E27, E43, E61 | IC DEC 380 | 1909485 | 14 |
| 1 | E74 | IC DEC 74H50 | 1909060 | 13 |
| 1 | E76 | IC DEC 74H40 | 1905586 | 12 |
| 1 | R68 | RESISTOR 390Ω, 1/4W, 5% | 1300309 | 11 |
| 1 | R67 | RESISTOR 180Ω, 1/4W, 5% | 1301322 | 10 |
| 3 | R65, R70, R71 | RESISTOR 150Ω, 1/4W, 5% | 1300250 | 9 |
| 32 | R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63 | RESISTOR 330Ω, 1/4W, 5% | 1300295 | 8 |
| 32 | R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64. | RESISTOR 680Ω, 1/4W, 5% | 1301424 | 7 |
| 85 | C1 THRU C32 C34 THRU C86 | CAPACITOR .01uf, 50V, 20% AXIAL | 1001610 | 6 |
| 6 | C87 THRU C92, | CAPACITOR 6.8uf, 35V, 10% TANT | 1005306 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009804 | 4 |
| REF | | MODULE ECO HISTORY | B-MH-M8104-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | D-AH-M8104-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8104-0-4 | 1 |

PARTS LIST

ETCH BOARD REV C

| IC TYPE | GND | +5V |
|---|---|---|
| DEC 74S153 | 8 | 16 |
| DEC 74175 | 8 | 16 |
| DEC 7485 | 8 | 16 |
| DEC 74S174 | 8 | 16 |
| DEC 74S157 | 8 | 16 |
| DEC 9318 | 8 | 16 |
| DEC 380 | 1 | 8 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

DEC FORM NO. DRE 104

| DEC NO | EIA NO | DEC NO | EIA NO |
|---|---|---|---|

SEMICONDUCTOR CONVERSION CHART

DRN. DATE 2-22-72
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD DATE
NEXT HIGHER ASSY E-[illegible]-1/45-0
SCALE
SHEET 1 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

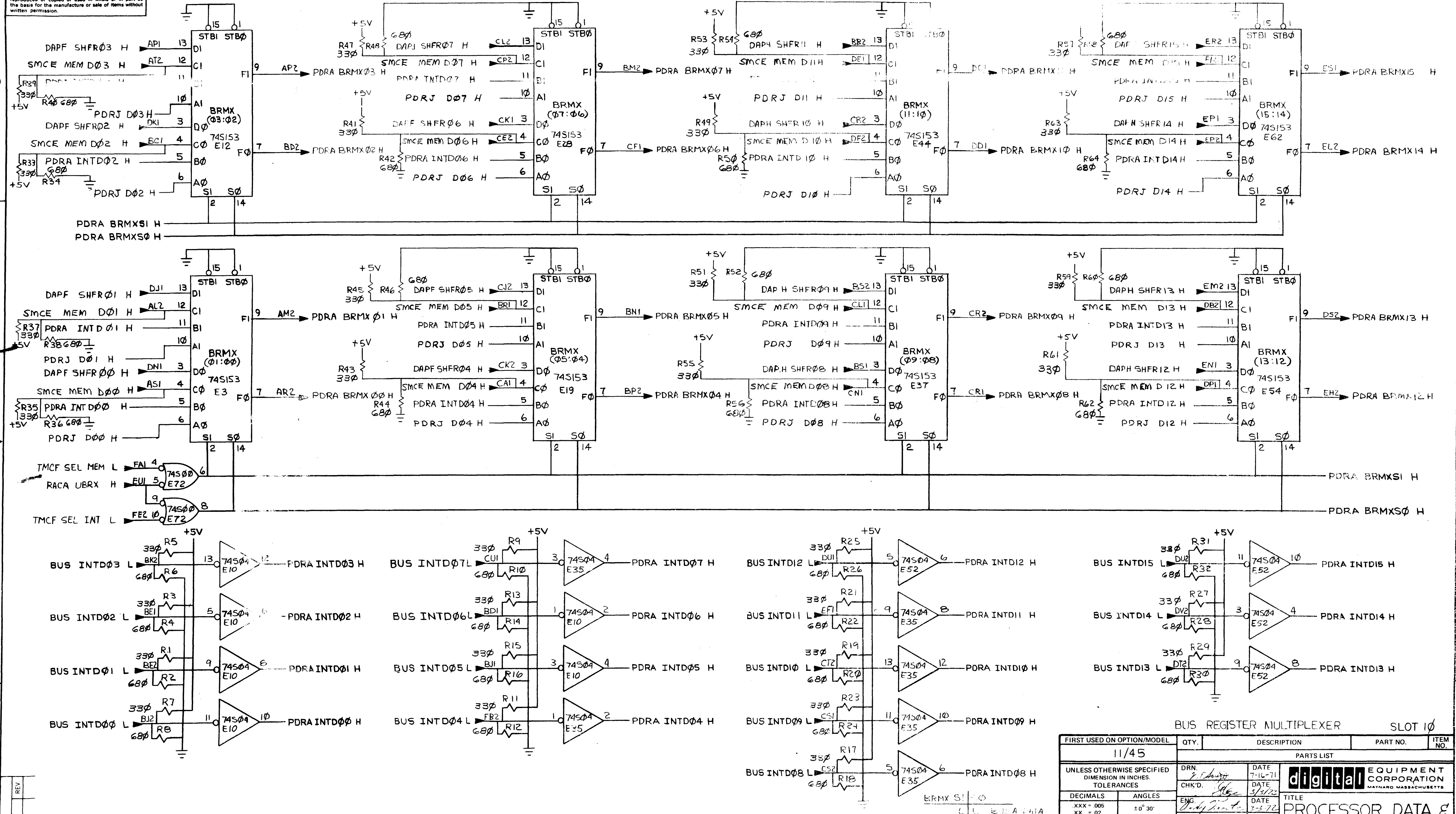
TITLE PROCESSOR DATA & UNIBUS REGS.

SIZE E CODE CS NUMBER M8104-0-1 REV. C

DIST

E CS M8104-0-1 C

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




BUS REGISTER MULTIPLEXER

SLOT 1Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. — DATE 7-16-71
CHK'D. — DATE 3/3/72
ENG. — DATE 3-3-72
PROJ. ENG. — DATE 3-3-72
PROD. — DATE

NEXT HIGHER ASSY. 6-DD-11/45-Ø

SCALE —//—

SHEET 2 OF 9

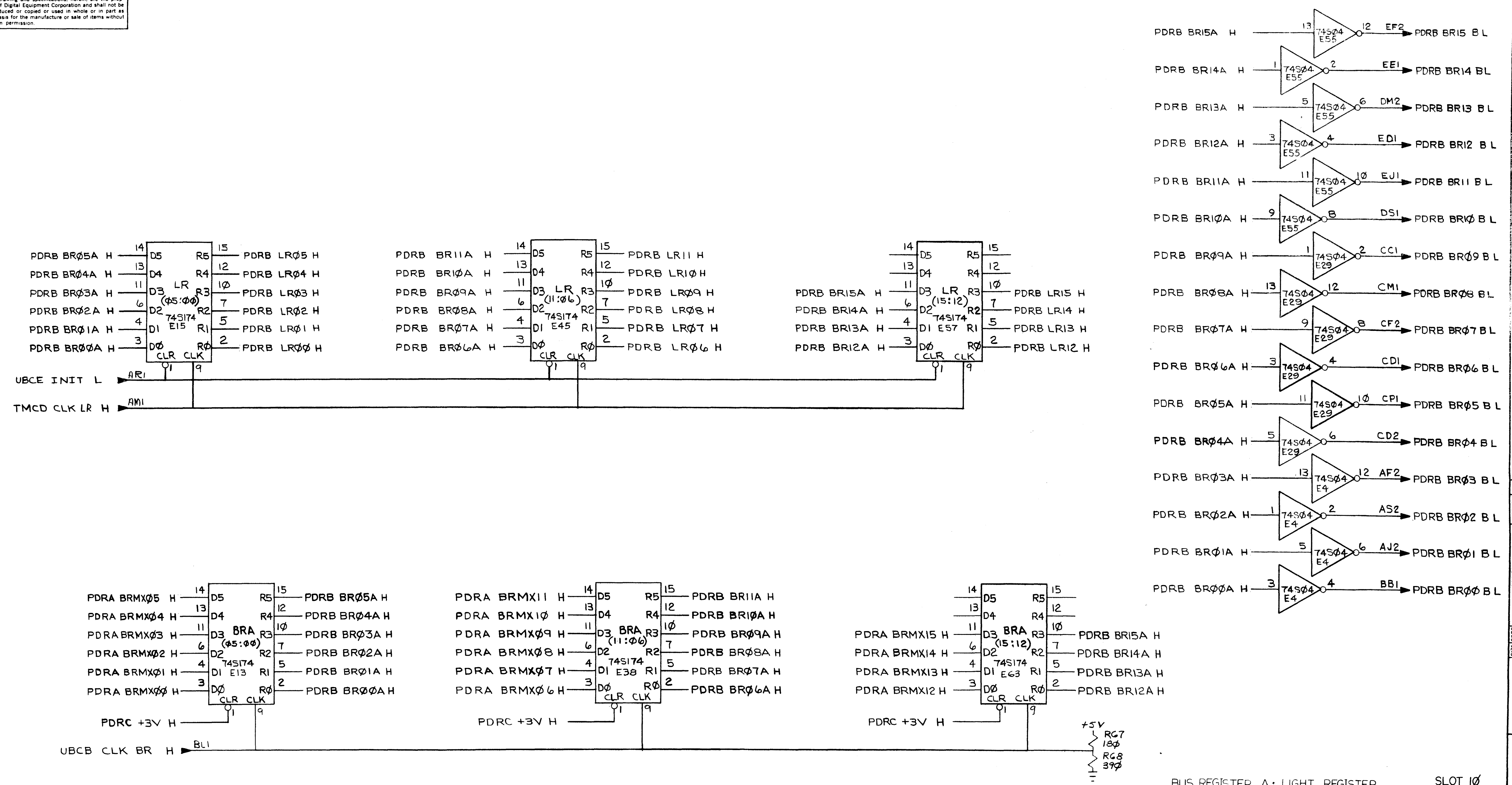
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE PROCESSOR DATA & UNIBUS REGS (PDRA)

SIZE D CODE CS NUMBER M81Ø4-Ø-1 REV C

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




BUS REGISTER A; LIGHT REGISTER

SLOT 1Ø

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL —//— FINISH —//—

DRN. / CHK'D. / ENG. / PROJ. ENG. / PROD. — DATE

NEXT HIGHER ASSY. E-DD-11/45-Ø

SCALE —//— SHEET 3 OF 9

QTY. | DESCRIPTION | PART NO. | ITEM NO. — PARTS LIST

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PROCESSOR DATA & UNIBUS REGS (PDRB)

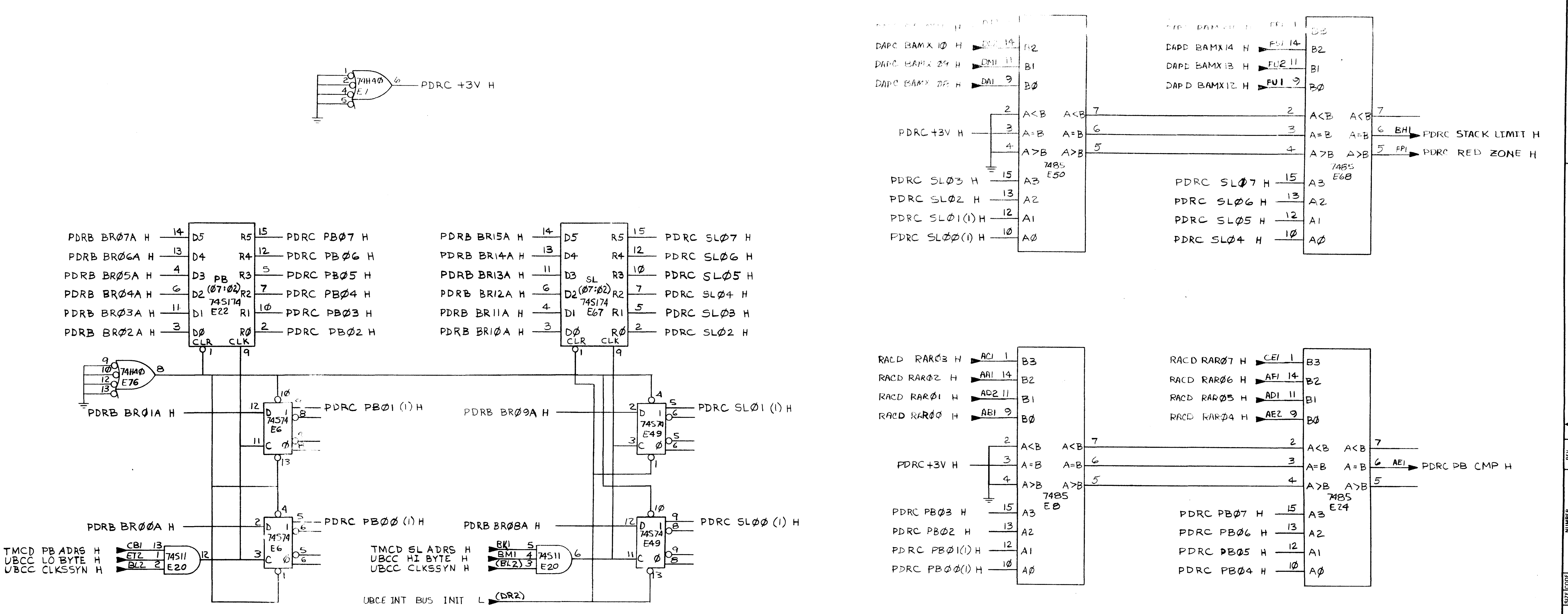
SIZE D CODE CS NUMBER M81Ø4-Ø-1 REV. C

DIST.

REVISIONS: REV / CHANGE NO. / CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




PROGRAM BREAK & STACK LIMIT REGISTERS SLOT 10

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX ± .005, .XX ± .02 — ANGLES: ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS — SURFACE QUALITY ✓

MATERIAL — FINISH

DRN. / DATE; CHK'D / DATE; ENG. / DATE; PROJ. ENG. / DATE; PROD. / DATE

NEXT HIGHER ASSY: B-DD-11/45-0

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PROCESSOR DATA & UNIBUS REGS (PDRC)

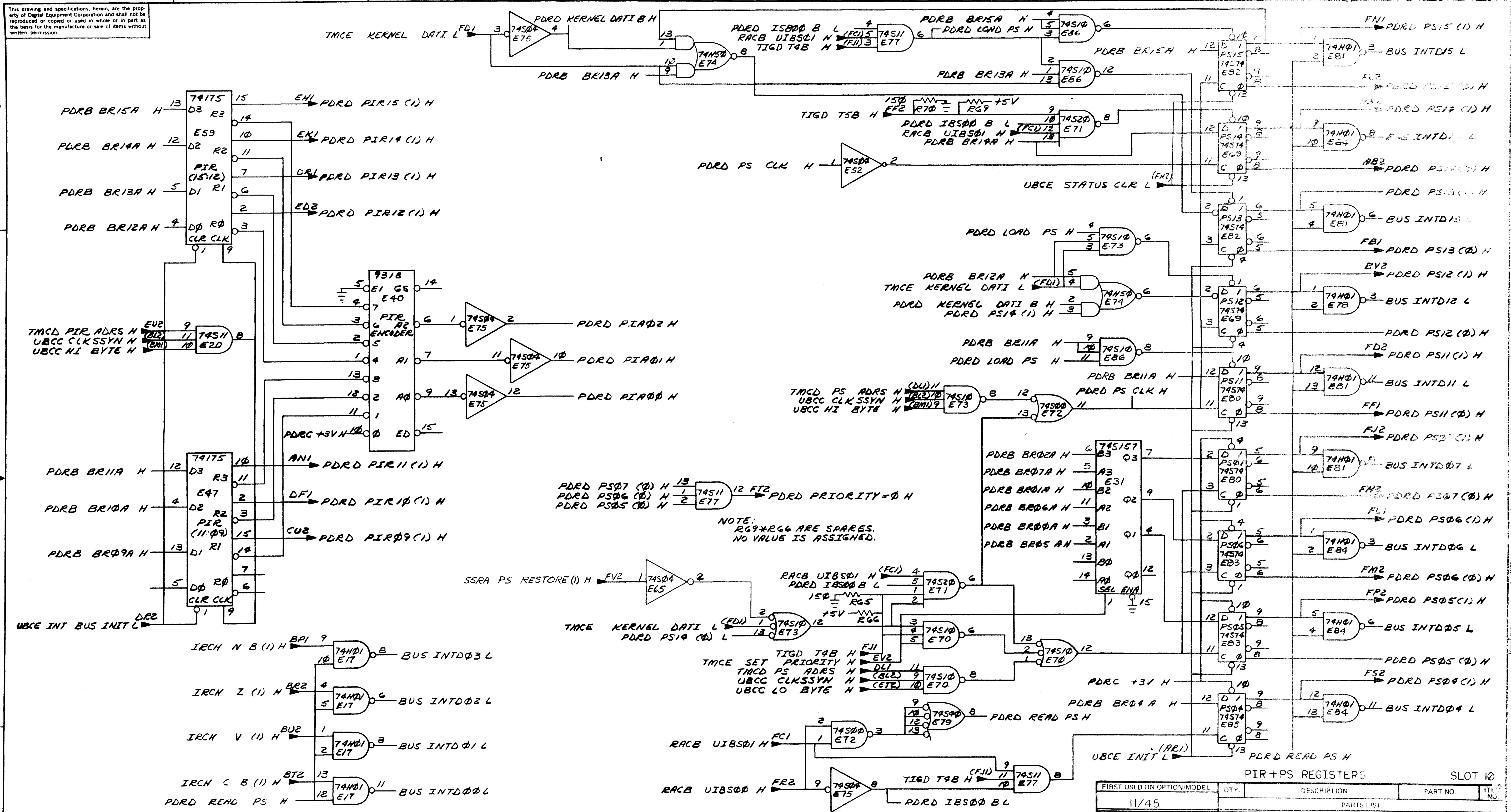
SIZE: D — CODE: CS — NUMBER: M8104-0-1 — REV.: C

SCALE — SHEET 4 OF 9 — DIST

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




PIR + PS REGISTERS — SLOT 10

| FIRST USED ON OPTION/MODEL | QTY | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| XXX ± .005 XX ± .02 X ± .1 | ± 0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN / CHK'D / ENG / PROJ. ENG / PROD / DATE

NEXT HIGHER ASSY

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PROCESSOR DATA & UNIBUS REGS (PDR)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8104-0-1 | C |

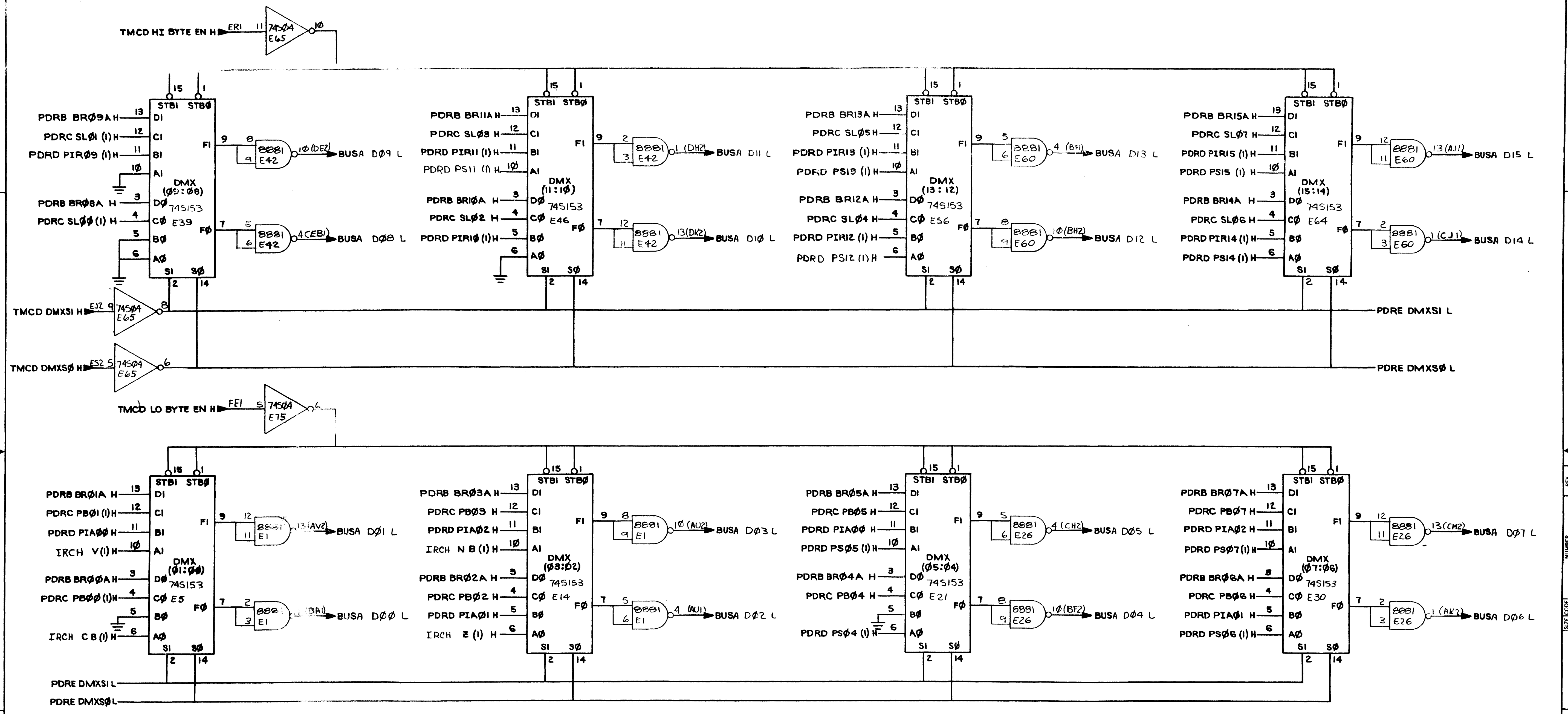
SCALE — SHEET 5 OF 8

REVISIONS: REV | CHANGE NO | CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| DMX | S1 | SØ | OUTPUT |
|---|---|---|---|
| | L | L | STATUS |
| | L | H | PIR ; PIA |
| | H | L | SL ; PB |
| | H | H | BR |

UNIBUSA DATA MULTIPLEXER SLOT1Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX ± .005, .XX ± .02 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

DRN. S.W.R. — DATE 7/13/71

CHK'D. — DATE

ENG. — DATE

PROJ ENG. — DATE

PROD — DATE

MATERIAL —

FINISH —

NEXT HIGHER ASSY. B-DD-1140-?

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE PROCESSOR DATA & UNIBUS REGS. (PDRE)

SIZE D — CODE — NUMBER M81Ø4-Ø-1 — REV C

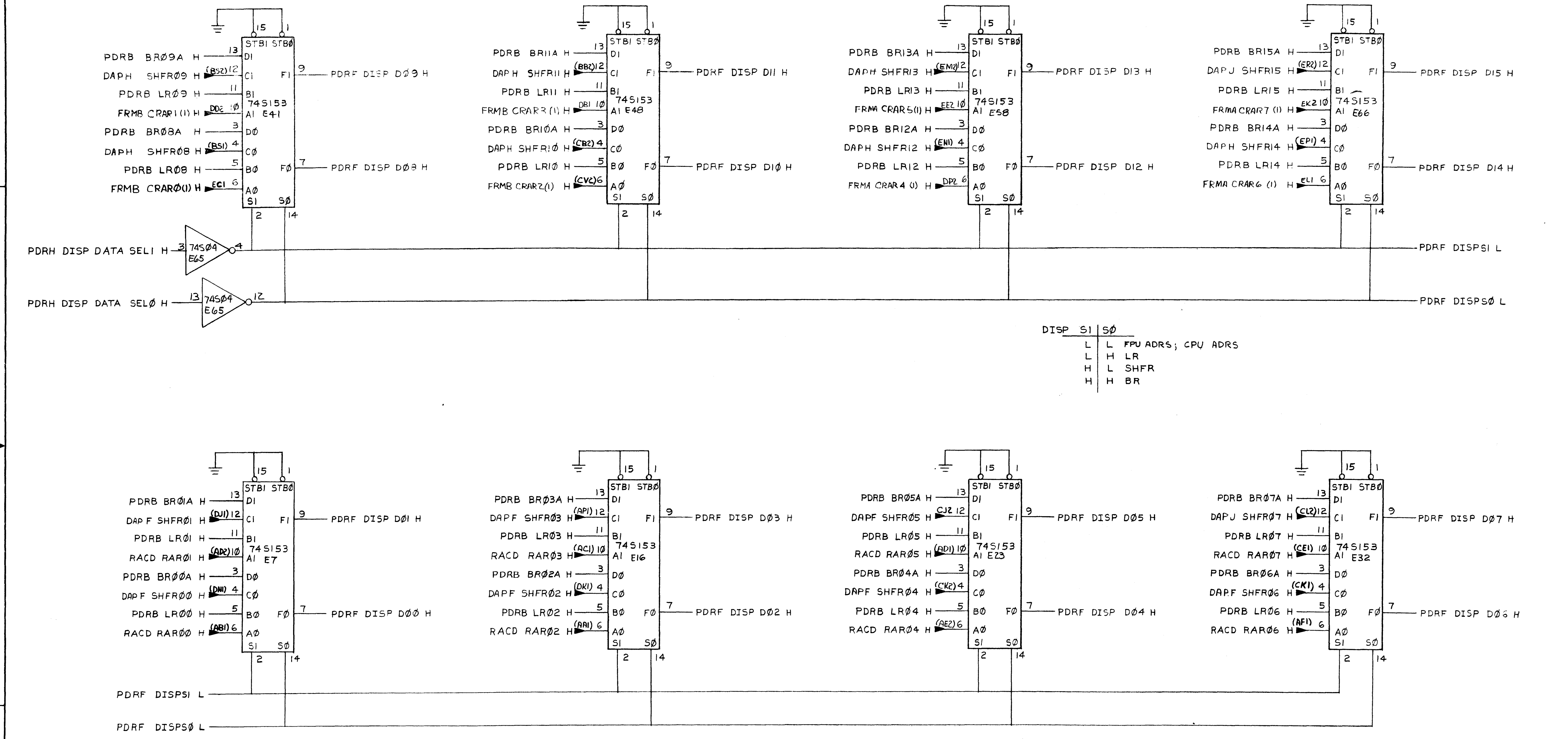
SCALE —

SHEET 6 OF 9

DIST

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




DATA DISPLAY MULTIPLEXER

SLOT 1Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. DATE 7-2-71 · CHK'D. DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE 3-15-72

NEXT HIGHER ASSY. B-DD-11/45-Ø

SCALE — SHEET 7 OF 9

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE PROCESSOR DATA & UNIBUS REGS (PDRF)

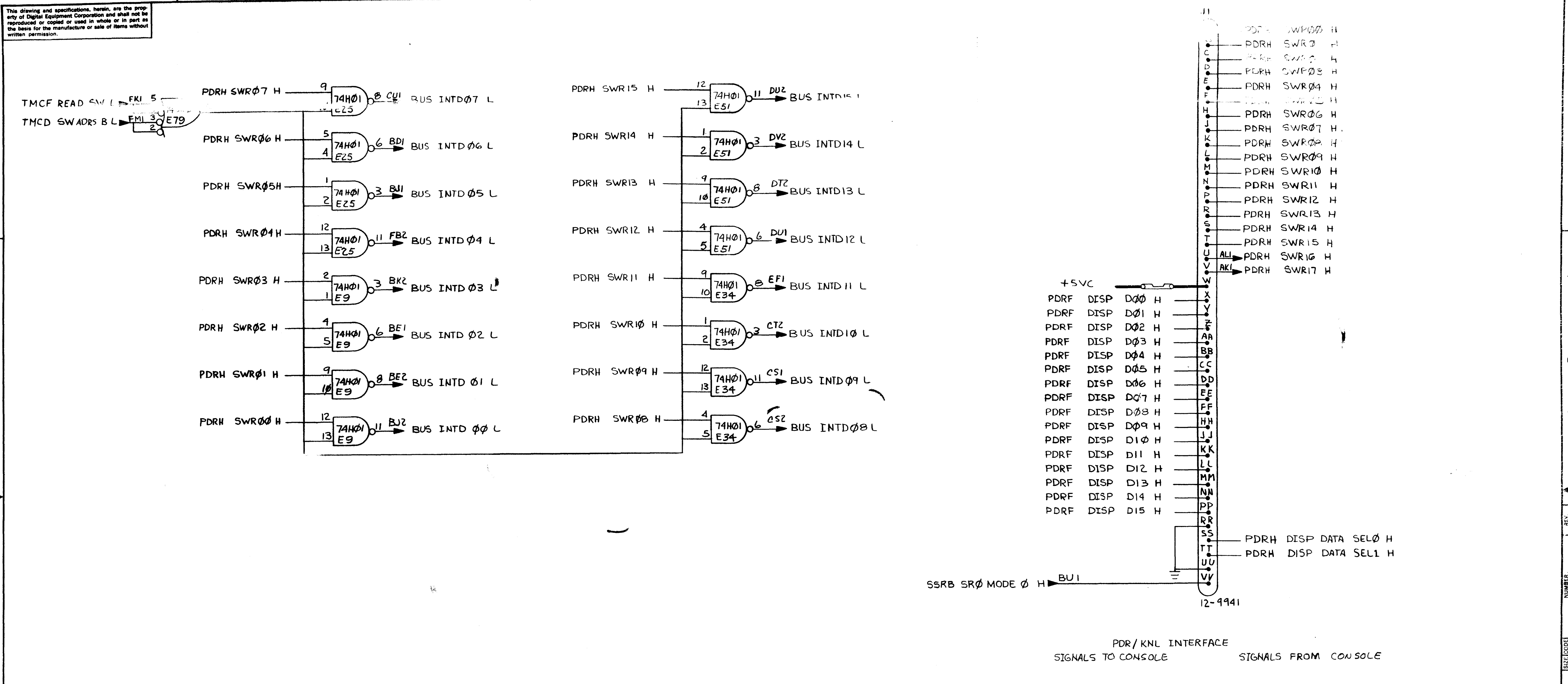
SIZE D CODE CS NUMBER M81Ø4-Ø-1 REV. C

DIST.

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




SWITCH REGISTER AND CONSOLE CABLE SLOT1Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. DATE · CHKD. DATE 3/3/72 · ENG. DATE 3/3/72 · PROJ. ENG. DATE · PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE PROCESSOR DATA UNIBUS REGS (PDRH)

NEXT HIGHER ASSY. B-DD-11/45-Ø

SIZE D CODE CS NUMBER M81Ø4-Ø-1 REV. C

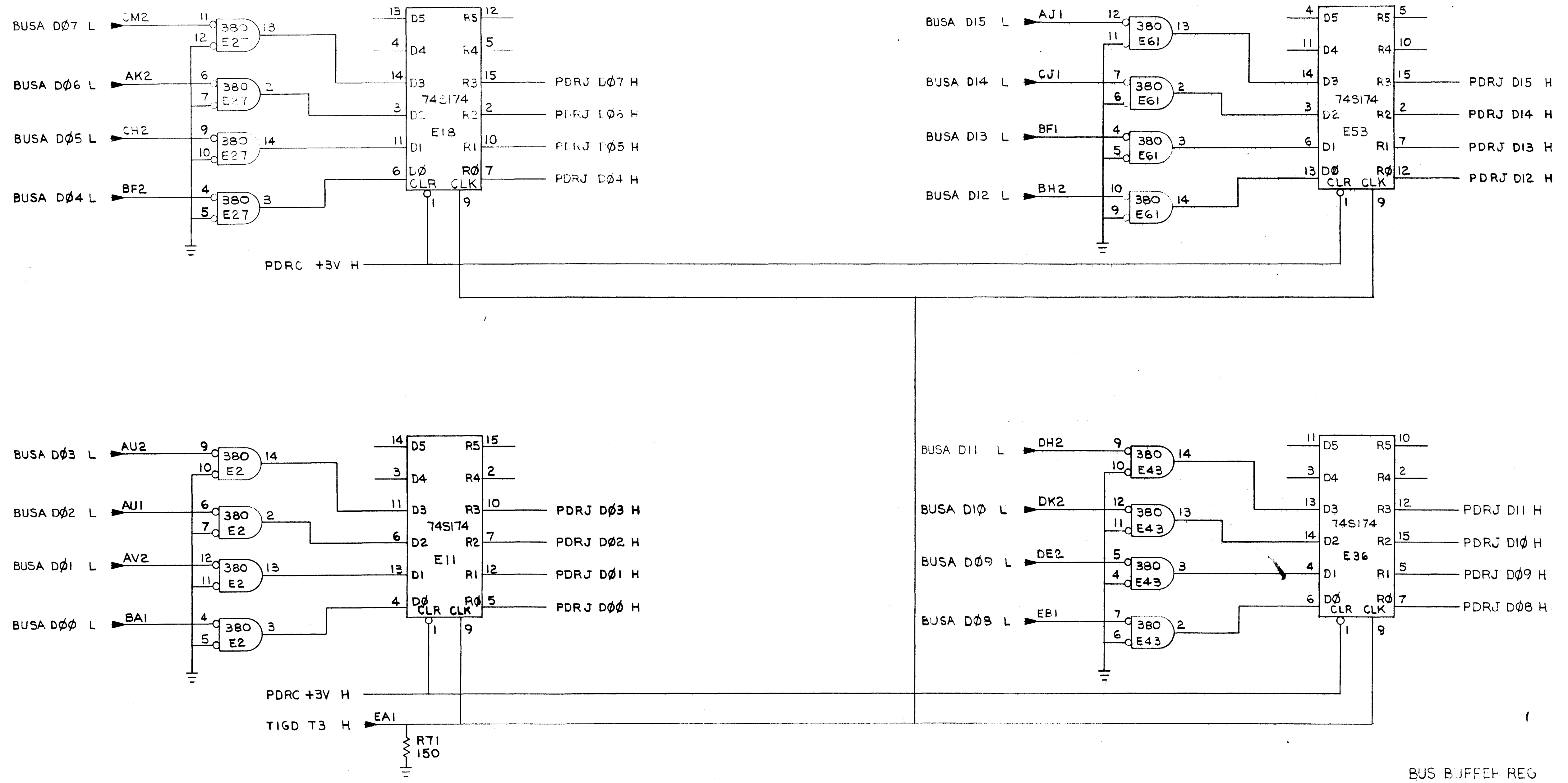
SCALE — SHEET 8 OF 9

DIST.

REVISIONS: REV. · CHANGE NO. · CHK

DEC FORM NO DRD 102-B

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION




BUS BUFFER REG SLOT 1Ø

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES
TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL —
FINISH —

DRN / CHK'D / ENG / PROJ. ENG. / PROD. — DATE 1/2/73, 1/15/73, 1/15/73, 1/15/73

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: PROCESSOR DATA UNIBUS REGS (PDRJ)

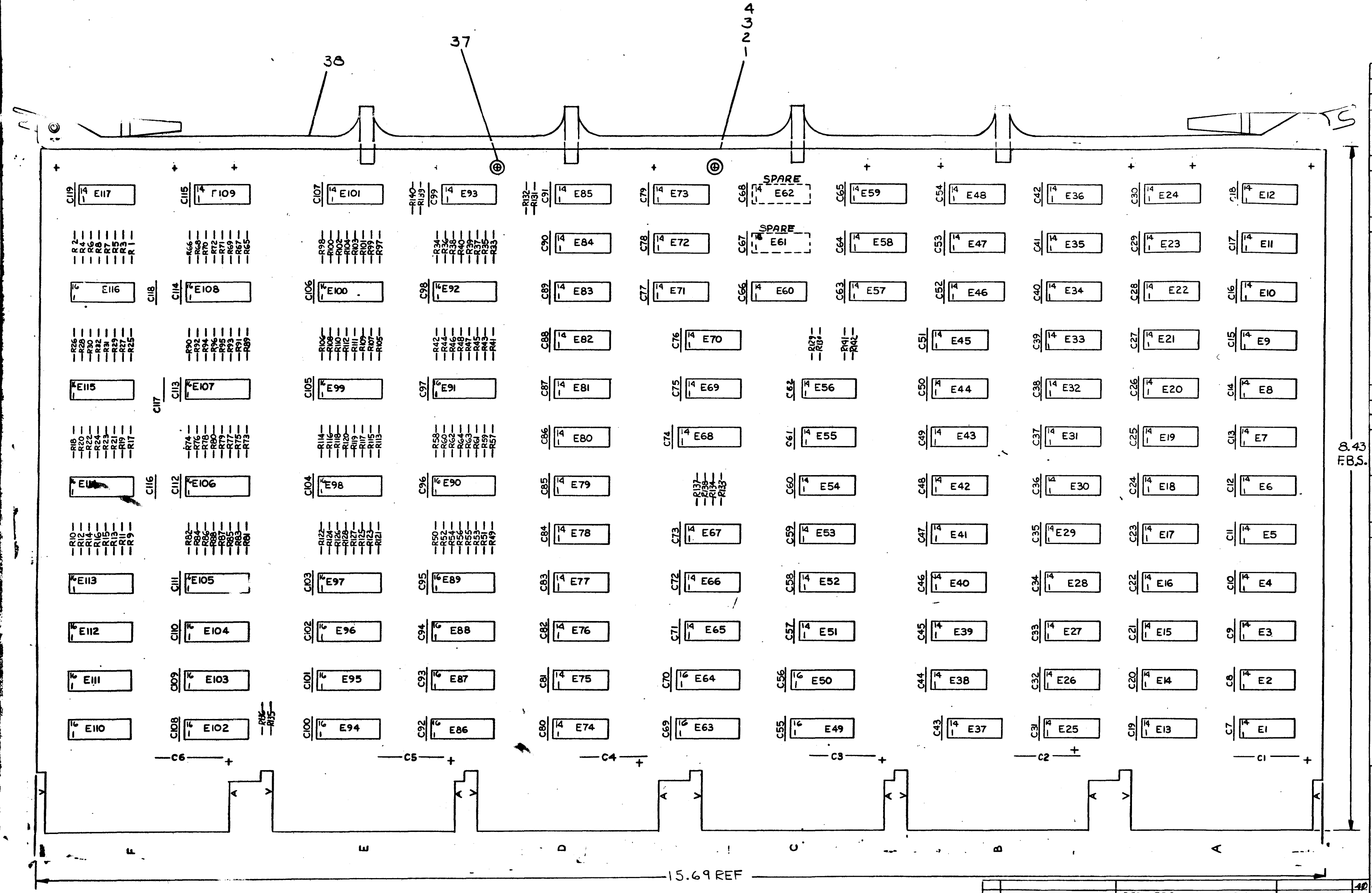
NEXT HIGHER ASSY. B-DD-11/45-Ø

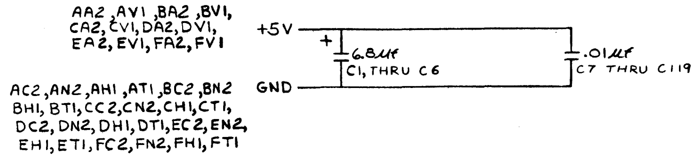
SIZE D CODE CS NUMBER M81Ø4-Ø-1 REV. C

SCALE — SHEET 9 OF 9

DIST.

1. UNLESS OTHERWISE NOTED, RESISTANCE IS IN Ω AND CAPACITANCE IS IN [illegible]FARADS. CAPS. WITHOUT VALUE NOTED ARE .01 MFD
2. E61 & E62 ARE SPARE IC LOCATIONS
3. R131, R133, R135, R137 & R139 ARE NOT USED




| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| | | | | 40 |
| 1 | R143 | RESISTOR, 1K, 1/4W, 5% | 1300365 | 39 |
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 38 |
| 12 | | EYELET | 9006732 | 37 |
| 1 | E116 | IC DEC 74187 (OR 3301) | 23-C44A2 | 36 |
| 1 | E113 | IC DEC 74187 (OR 3301) | 23-C43A2 | 35 |
| 1 | E114 | IC DEC 74187 (OR 3301) | 23-C42A2 | 34 |
| 1 | E115 | IC DEC 74187 (OR 3301) | 23-C41A2 | 33 |
| 1 | E108 | IC DEC 74187 (OR 3301) | 23-C12A2 | 32 |
| 1 | E106 | IC DEC 74187 (OR 3301) | 23-C11A2 | 31 |
| 1 | E105 | IC DEC 74187 (OR 3301) | 23-C47A2 | 30 |
| 1 | E107 | IC DEC 74187 (OR 3301) | 23-C09A2 | 29 |
| 1 | E100 | IC DEC 74187 (OR 3301) | 23-C08A2 | 28 |
| 1 | E99 | IC DEC 74187 (OR 3301) | 23-C07A2 | 27 |
| 1 | E98 | IC DEC 74187 (OR 3301) | 23-C39A2 | 26 |
| 1 | E97 | IC DEC 74187 (OR 3301) | 23-C38A2 | 25 |
| 1 | E92 | IC DEC 74187 (OR 3301) | 23-C04A2 | 24 |

PARTS LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 1 | E91 | IC DEC 74187 (OR 3301) | 23-C03A2 | 23 |
| 1 | E89 | IC DEC 74187 (OR 3301) | 23-C02A2 | 22 |
| 1 | E90 | IC DEC 74187 (OR 3301) | 23-C01A2 | 21 |
| 12 | E1, E2, E13, E14, E25, E26, E36, E37, E38, E73, E109, E117 | IC DEC 74S74 | 1910544 | 20 |
| 1 | E68 | IC DEC 74S74-45 | 1910950 | 19 |
| 12 | E86, E87, E88, E94, E95, E96, E102, E103, E104, E110, E111, E112 | IC DEC 74S174 | 1910550 | 18 |
| 4 | E49, E50, E63, E64 | IC DEC 74S153 | 1910547 | 17 |
| 38 | E5, E7, E8, E9, E11, E12, E17, E18, E19, E20, E21, E22, E23, E24, E33, E35, E39, E42, E43, E44, E45, E46, E47, E51, E54, E65, E70, E71, E74, E75, E76, E77, E80, E81, E82, E83, E101, E32 | IC DEC 74S64 | 1910542 | 16 |
| 1 | E15 | IC DEC 74S40 | 1910541 | 15 |
| 3 | E16, E30, E41 | IC DEC 74S20 | 1910539 | 14 |
| 4 | E55, E66, E69, E85 | IC DEC 74S11 | 1910537 | 13 |
| 10 | E3, E10, E28, E29, E40, E48, E53, E59, E60, E67 | IC DEC 74S10 | 1910536 | 12 |
| 11 | E6, E27, E34, E52, E56, E57, E72, E78, E79, E84, E93 | IC DEC 74S04 | 1910534 | 11 |
| 3 | E4, E31, E58 | IC DEC 74S00 | 1910532 | 10 |
| 66 | R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R96, R98, R100, R102, R104, R106, R108, R110, R112, R114, R116, R118, R120, R122, R124, R126, R128, R130, R142 | RESISTOR 680Ω, 1/4W, 5% | 1301424 | 9 |
| 66 | R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27, R29, R31, R33, R35, R37, R39, R41, R43, R45, R47, R49, R51, R53, R55, R57, R59, R61, R63, R65, R67, R69, R71, R73, R75, R77, R79, R81, R83, R85, R87, R89, R91, R93, R95, R97, R99, R101, R103, R105, R107, R109, R111, R113, R115, R117, R119, R121, R123, R125, R127, R129, R141 | RESISTOR 330Ω, 1/4W, 5% | 1300295 | 8 |
| 5 | R132, R134, R136, R138, R140 | RESISTOR 150Ω, 1/4W, 5% | 1300250 | 7 |
| 6 | C1 THRU C6 | CAPACITOR 6.8µf, 35V, 20% TANT | 1000067 | 6 |
| 113 | C7 THRU C119 | CAPACITOR .01µf, 100V, 20% DISC | 1001610 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009805 | 4 |
| REF | | MODULE ECO HISTORY | B-MH-M8103-C-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M8103-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8103-0-4 | 1 |

PARTS LIST

| IC TYPE | GND | +5V |
|---|---|---|
| DEC 74187 (OR 3301) | 8 | 16 |
| DEC 74S174 | 8 | 16 |
| DEC 74S15? | 8 | 16 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

ETCH BOARD REV C

SEMICONDUCTOR CONVERSION CHART

| DEC NO | EIA NO | DEC NO | EIA NO |
|---|---|---|---|

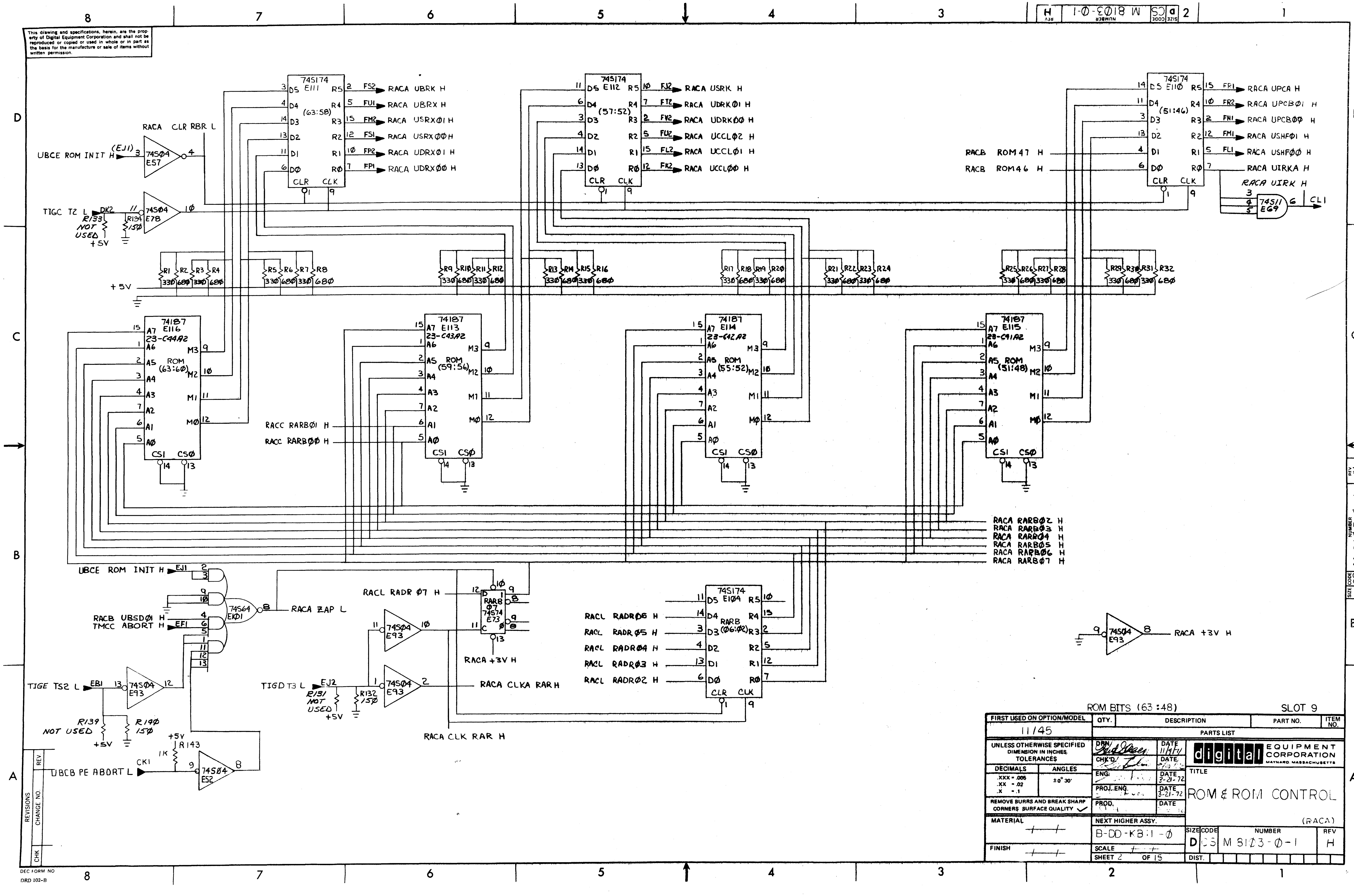
REVISIONS: A ORIGINATED; B; C; D 9-27-72; E; F; H

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

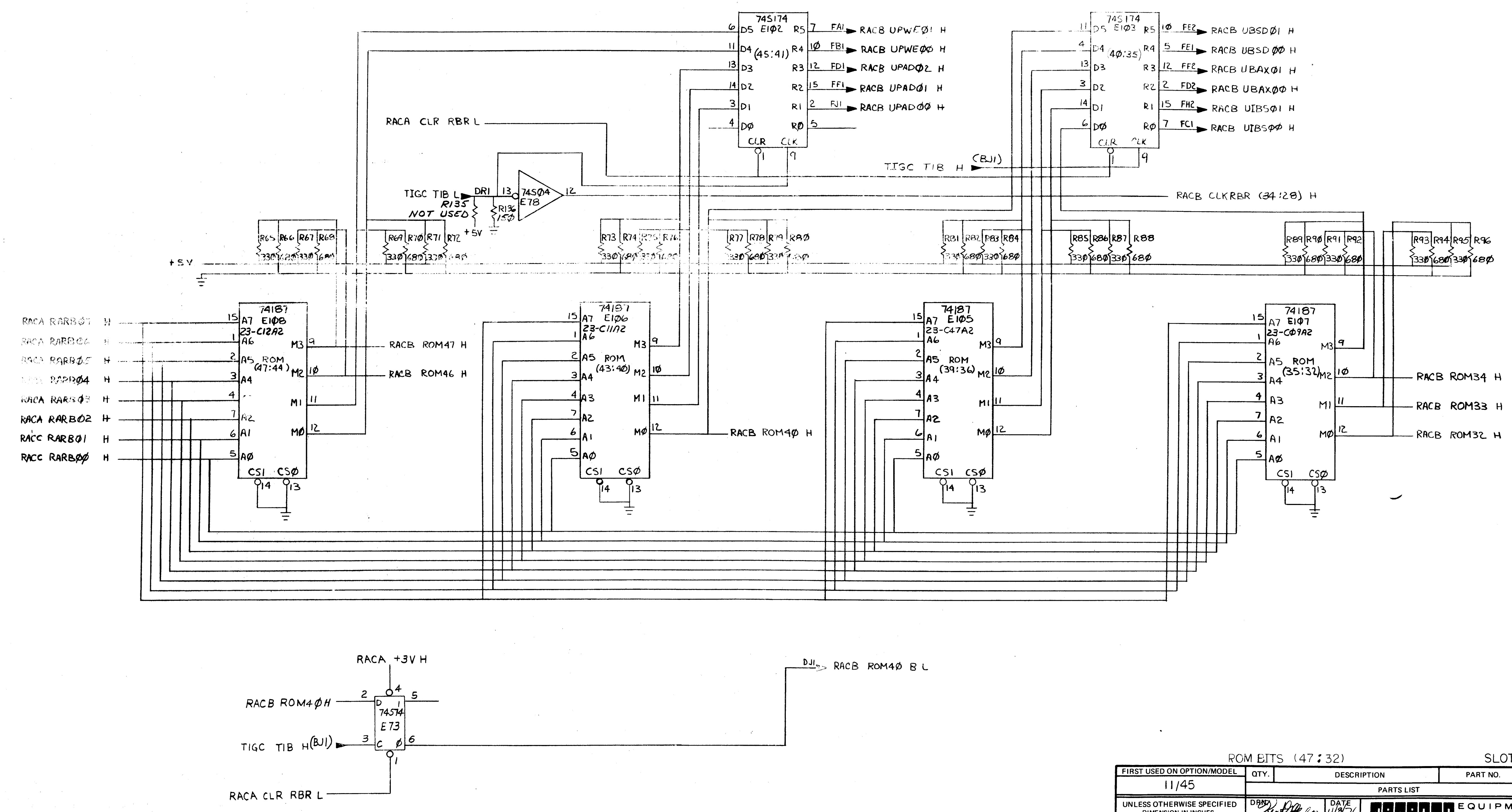
TITLE: ROM & ROM CONTROL

SIZE E, CODE CS, NUMBER M8103-0-1, REV H

CS M8103-0-1


This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
74S174 E111 (63:58)
RACA UBRK H
RACA UBRX H
RACA USRXØ1 H
RACA USRXØØ H
RACA UDRXØ1 H
RACA UDRXØØ H
74S174 E112 (57:52)
RACA USRK H
RACA UDRKØ1 H
RACA UDRKØØ H
RACA UCCLØ2 H
RACA UCCLØ1 H
RACA UCCLØØ H
74S174 E11Ø (51:46)
RACB ROM 47 H
RACB ROM 46 H
RACA UPCA H
RACA UPCBØ1 H
RACA UPCBØØ H
RACA USHFØ1 H
RACA USHFØØ H
RACA UIRKA H
RACA UIRK H
74S11 E69
CL1
RACA CLR RBR L
UBCE ROM INIT H
74S04 E57
TIGC T2 L
74S04 E78
R133 NOT USED
R134 15Ø
+5V
74187 E116 23-C44A2 ROM (63:6Ø)
74187 E113 23-C43A2 ROM (59:56)
74187 E114 23-C42A2 ROM (55:52)
74187 E115 23-C41A2 ROM (51:48)
RACC RARBØ1 H
RACC RARBØØ H
RACA RARBØ2 H
RACA RARBØ3 H
RACA RARBØ4 H
RACA RARBØ5 H
RACA RARBØ6 H
RACA RARBØ7 H
UBCE ROM INIT H
RACB UBSDØ1 H
TMCC ABORT H
74S64 EK01
RACA ZAP L
RACL RADR Ø7 H
RARB Ø7 74S74 E73
RACA +3V H
74S174 E1Ø9 RARB (Ø6:Ø2)
RACL RADRØ6 H
RACL RADRØ5 H
RACL RADRØ4 H
RACL RADRØ3 H
RACL RADRØ2 H
TIGE TS2 L
74S04 E93
TIGD T3 L
R131 NOT USED
R132 15Ø
RACA CLKA RAR H
RACA CLK RAR H
R139 NOT USED
R140 15Ø
UBCB PE ABORT L
R143 1K
74S04 E52
74S04 E93
RACA +3V H
ROM BITS (63:48)
SLOT 9
FIRST USED ON OPTION/MODEL
11/45
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1
ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
DATE 11/4/71
DATE 3-21-72
DATE 3-21-72
NEXT HIGHER ASSY. B-DD-KB11-Ø
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
TITLE ROM & ROM CONTROL (RACA)
SIZE D CODE CS NUMBER M 81Ø3-Ø-1 REV H
SHEET 2 OF 15
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ROM BITS (47:32)    SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH

DRN DATE 11/9/71
CHKD DATE
ENG DATE 3-21-72
PROJ ENG DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

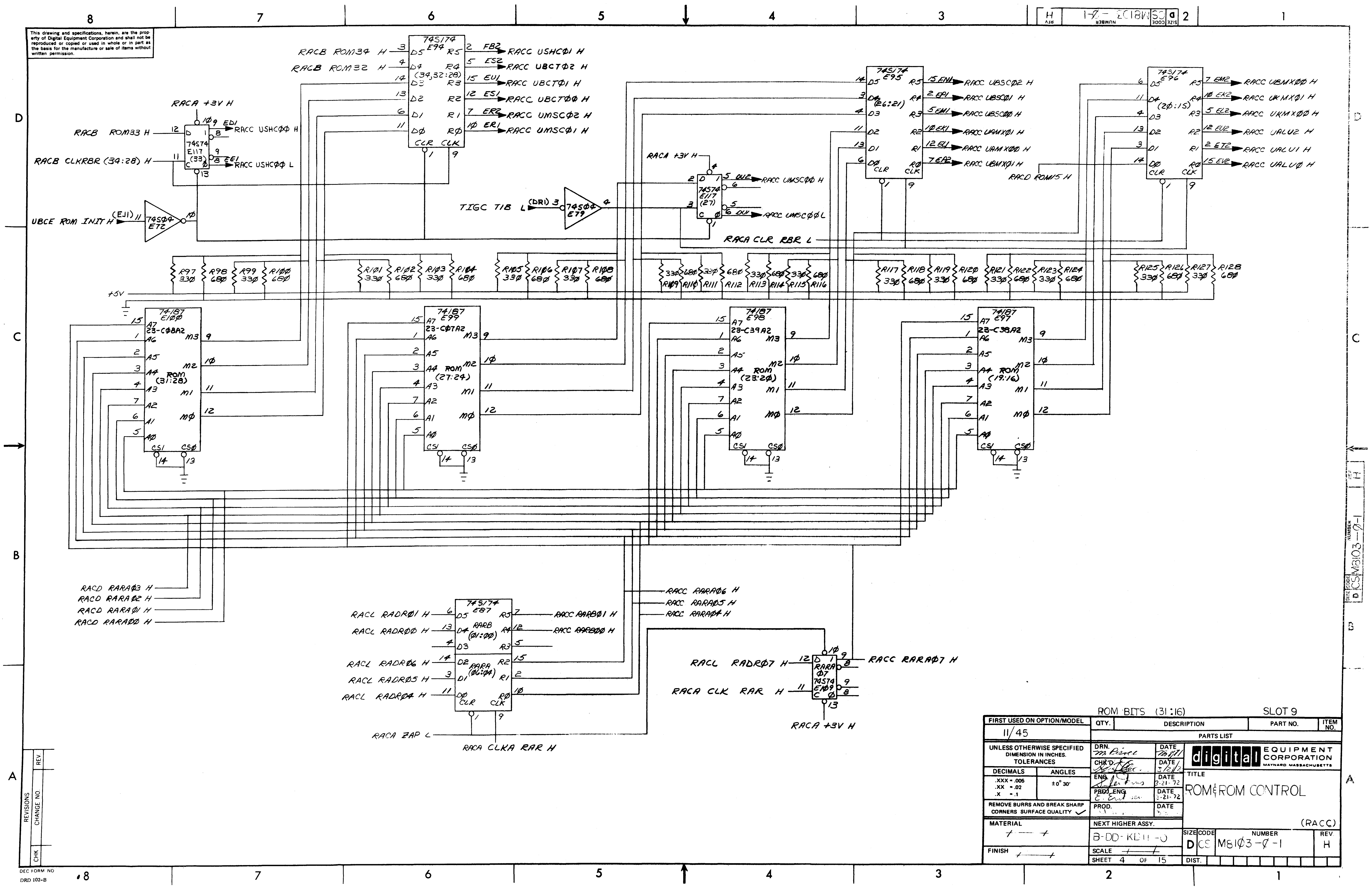
TITLE: ROM & ROM CONTROL (RACB)

NEXT HIGHER ASSY. B-DD-KB11-Ø

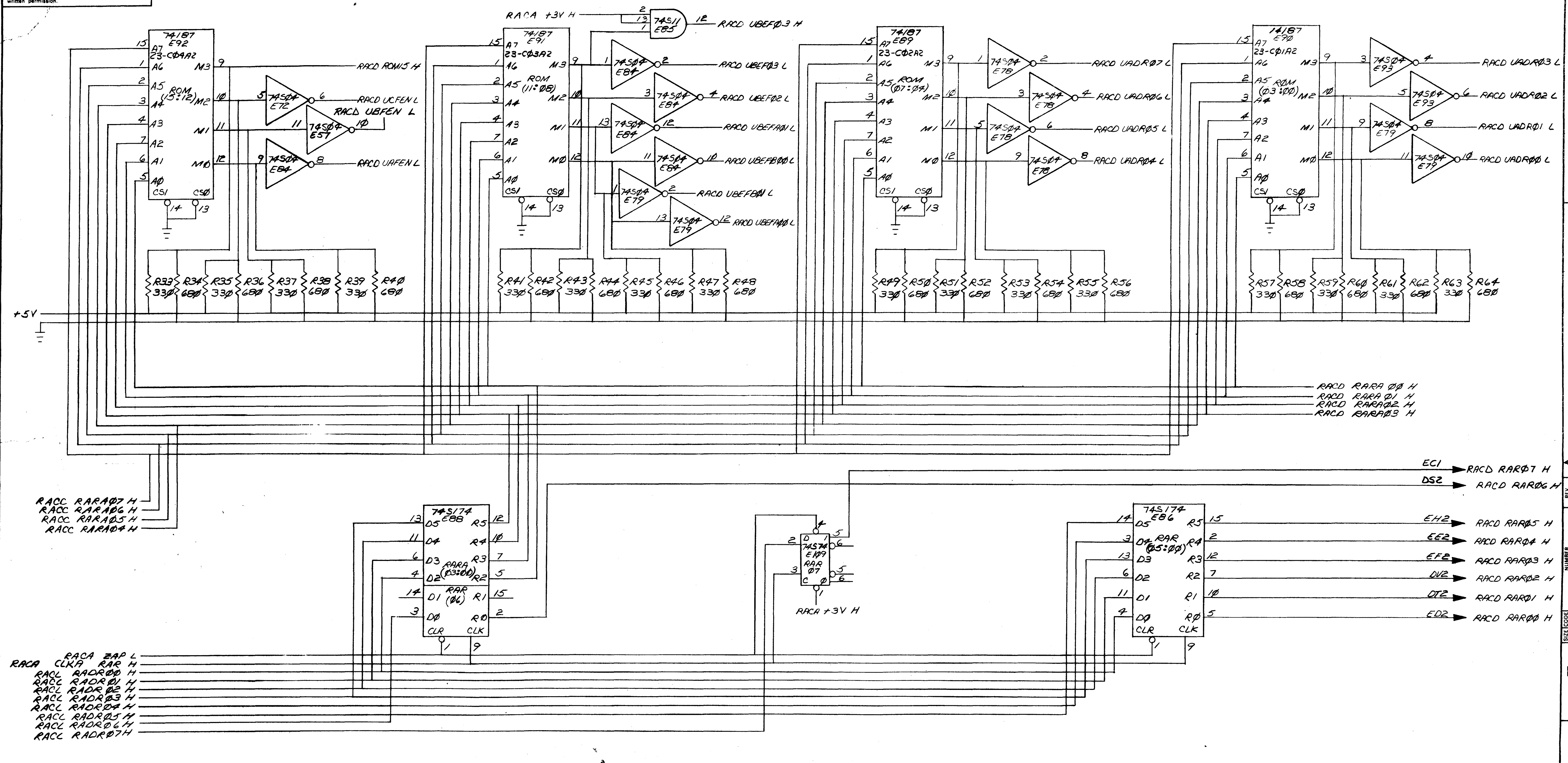
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M 81Ø3-Ø-1 | H |

SCALE
SHEET 3 OF 15

DEC FORM NO DRD 102-B


This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
ROM BITS (31:16)
SLOT 9
FIRST USED ON OPTION/MODEL
11/45
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS
ANGLES
.XXX = .005
.XX = .02
.X = .1
±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
QTY.
DESCRIPTION
PART NO.
ITEM NO.
PARTS LIST
DRN.
CHK'D.
ENG.
PROD. ENG.
PROD.
DATE
NEXT HIGHER ASSY.
B-DD-KD11-0
SCALE
SHEET 4 OF 15
digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS
TITLE
ROM & ROM CONTROL
(RACC)
SIZE D
CODE CS
NUMBER M8103-0-1
REV. H
DIST.
REVISIONS
CHANGE NO
REV.
CHK
DEC FORM NO
DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ROM BITS (15:00)

SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. — DATE 11/9/71

CHK'D. — DATE

ENG. — DATE 3-21-72

PROJ. ENG. E. Erickson — DATE 3-21-72

PROD. — DATE

NEXT HIGHER ASSY. B-DD-KB11-0

SCALE —

SHEET 5 OF 15

**digital** EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: ROM & ROM CONTROL (RACD)

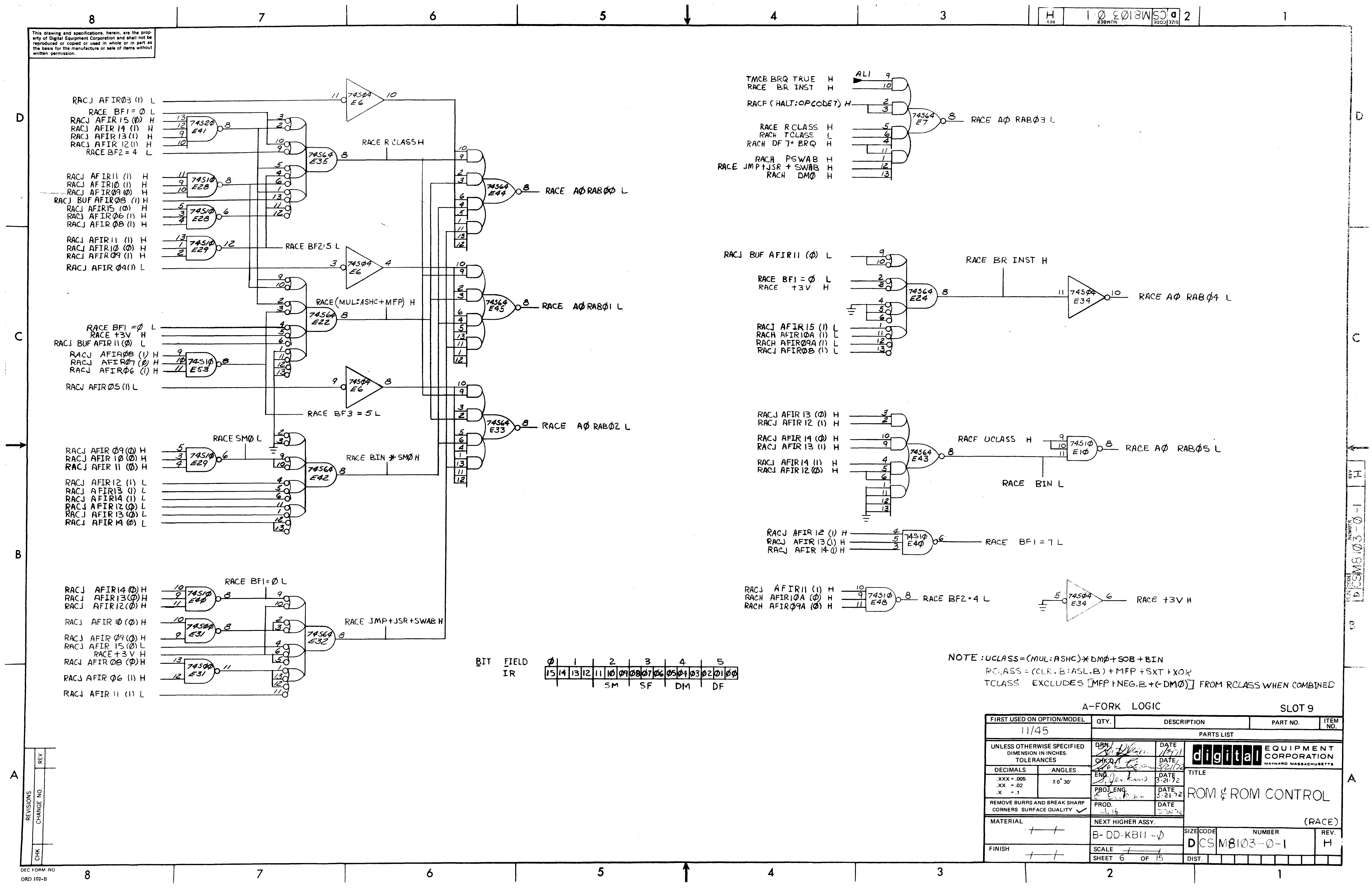
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8103-0-1 | H |

DIST.

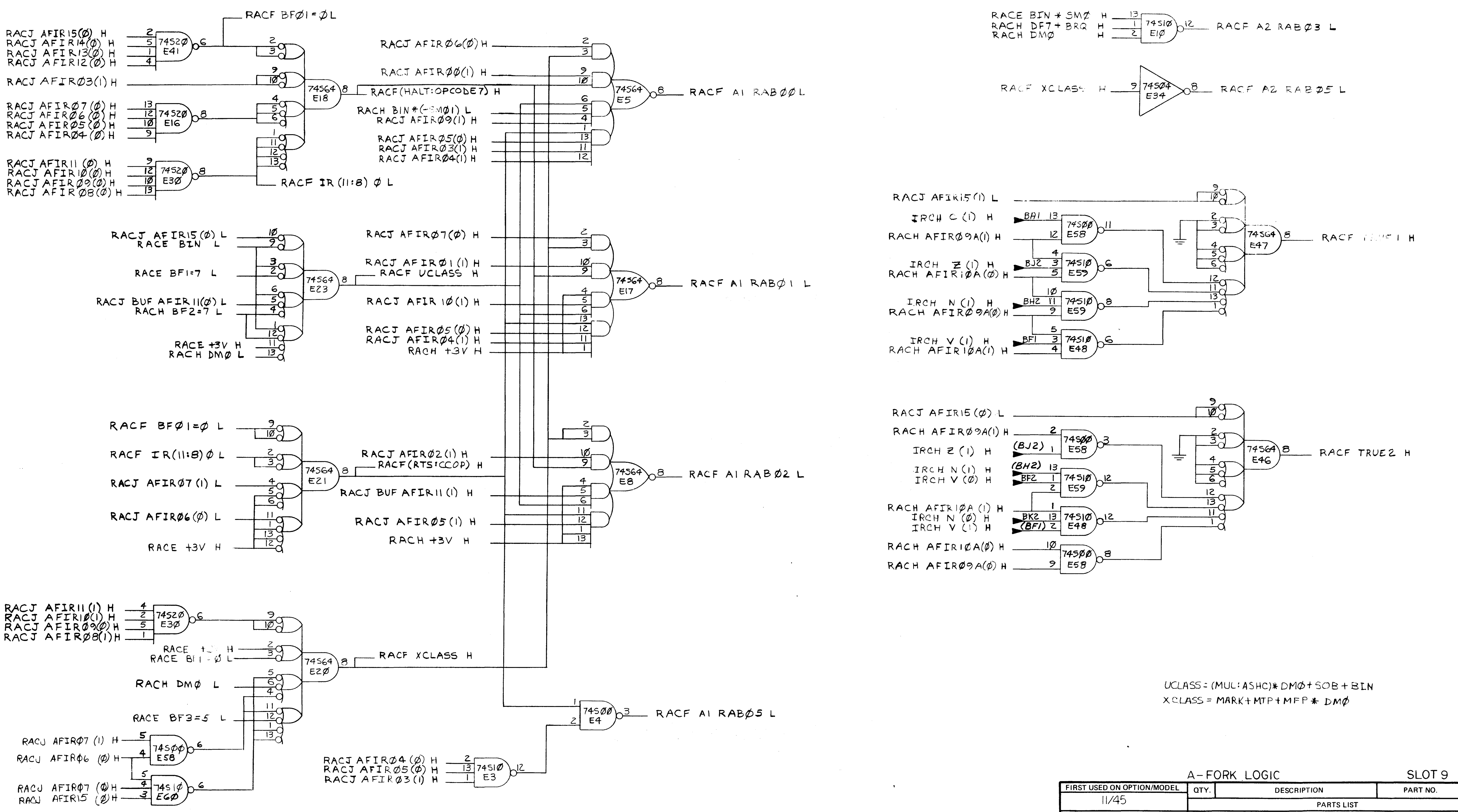
REVISIONS — REV / CHANGE NO. / CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B


This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
RACE AØ RABØØ L
RACE AØ RABØ1 L
RACE AØ RABØ2 L
RACE AØ RABØ3 L
RACE AØ RABØ4 L
RACE AØ RABØ5 L
RACE R CLASS H
RACE BF2=5 L
RACE (MUL:ASHC+MFP) H
RACE BF3 = 5 L
RACE SMØ L
RACE BIN * SMØ H
RACE BF1 = Ø L
RACE JMP+JSR+SWAB H
RACE BR INST H
RACF UCLASS H
RACE BIN L
RACE BF1 = 7 L
RACE BF2 = 4 L
RACE +3V H
BIT FIELD IR
SM SF DM DF
NOTE: UCLASS = (MUL:ASHC)*DMØ+SOB+BIN
RCLASS = (CLR.B:ASL.B)+MFP+SXT+XOR
TCLASS EXCLUDES [MFP+NEG.B+(-DMØ)] FROM RCLASS WHEN COMBINED
A-FORK LOGIC
SLOT 9
FIRST USED ON OPTION/MODEL 11/45
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1
ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
NEXT HIGHER ASSY. B-DD-KB11-Ø
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE ROM & ROM CONTROL (RACE)
SIZE D CODE CS NUMBER M8103-Ø-1 REV. H
SCALE
SHEET 6 OF 15
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




UCLASS = (MUL:ASHC)*DMØ+SOB+BIN
XCLASS = MARK+MTP+MFP * DMØ

A-FORK LOGIC SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —//—
FINISH —//—

DRN DATE 7/5/71
CHKD DATE
ENG. DATE 3-21-72
PROJ ENG. DATE 3-21-72
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE ROM & ROM CONTROL (RACF)

NEXT HIGHER ASSY. B-CD-KB11

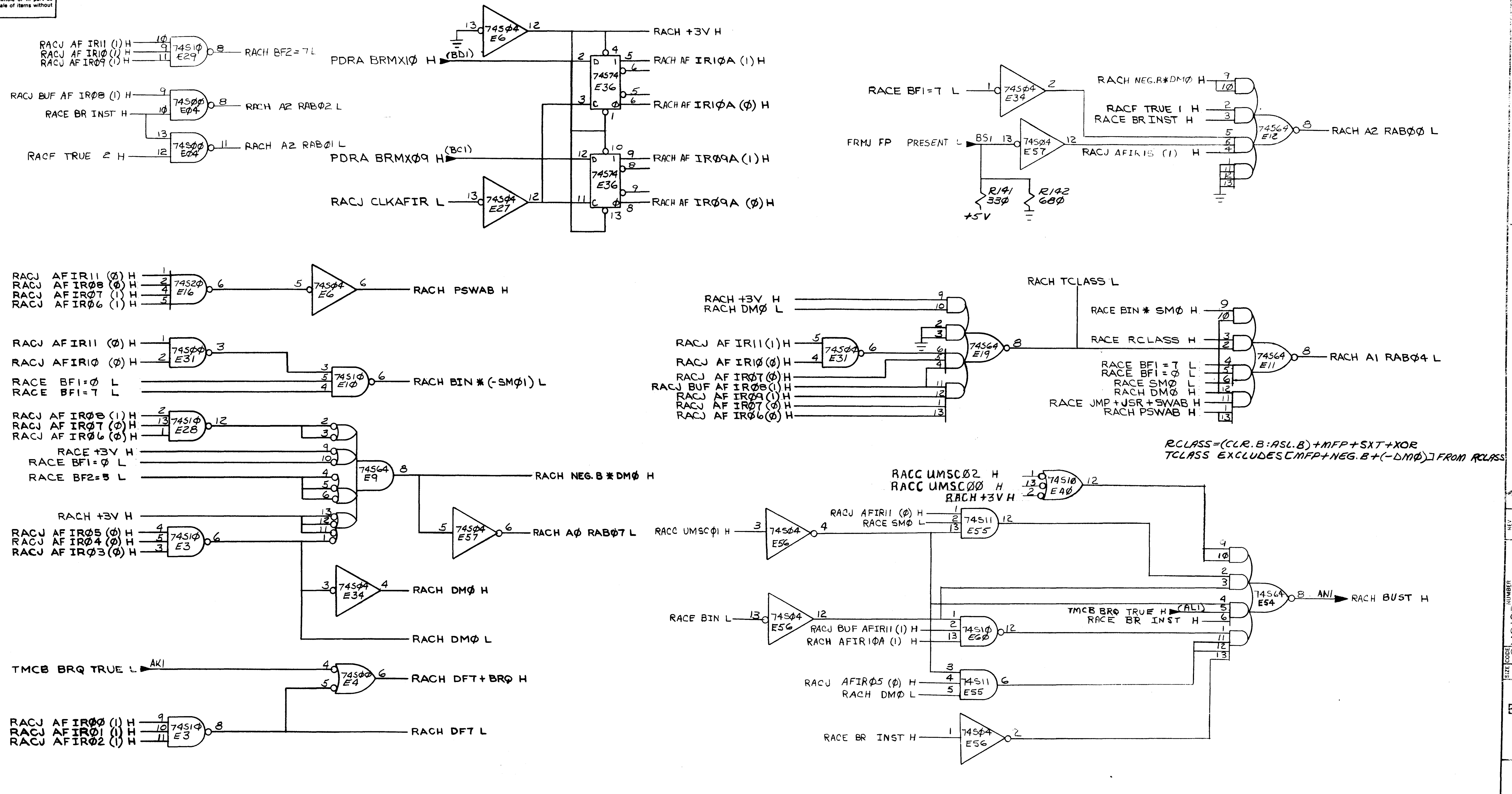
SIZE D CODE CS NUMBER M81Ø3-Ø-1 REV. H

SCALE —//— SHEET 7 OF 15 DIST.

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




A-FORK LOGIC SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. DATE 7-7-71

CHKD. DATE 3/21/72

ENG. DATE 3-21-72

PROJ. ENG. DATE 3-21-72

PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11

SCALE —//— SHEET 8 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE ROM & ROM CONTROL (RACH)

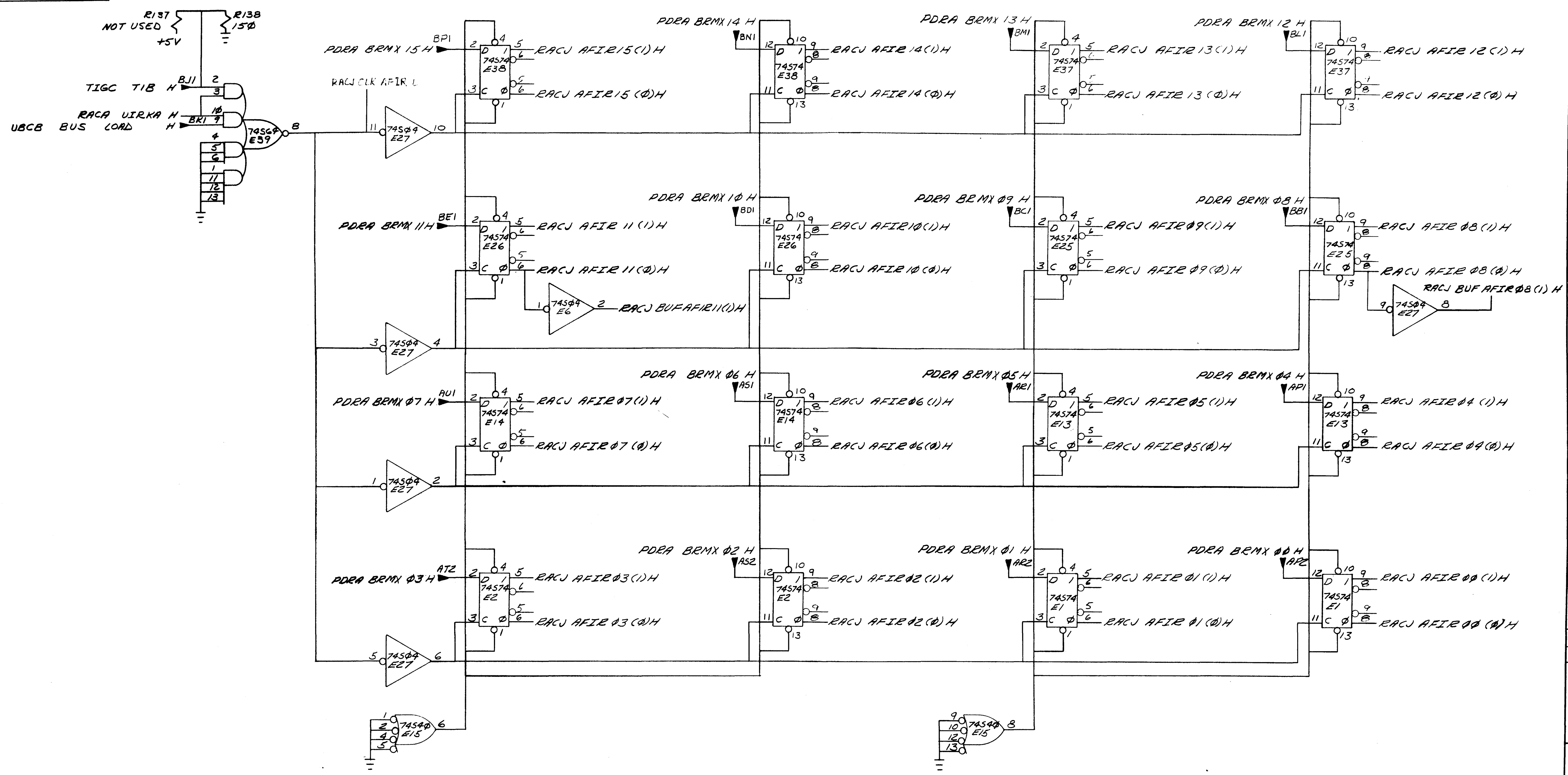
SIZE D CODE CS NUMBER M8103-0-1 REV. H

DIST.

REVISIONS REV CHANGE NO. CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




REVISIONS | REV | CHANGE NO | CHK

INSTRUCTION REG. (A-FORK COPY) SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX ± .005<br>.XX ± .02<br>.X ± .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

MATERIAL —

FINISH —

DRN. DATE 7-7-71
CHK'D. DATE
ENG. DATE 3-21-72
PROJ. ENG. DATE 3-21-72
PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11 Ø

SCALE

SHEET 9 OF 15

DIST.

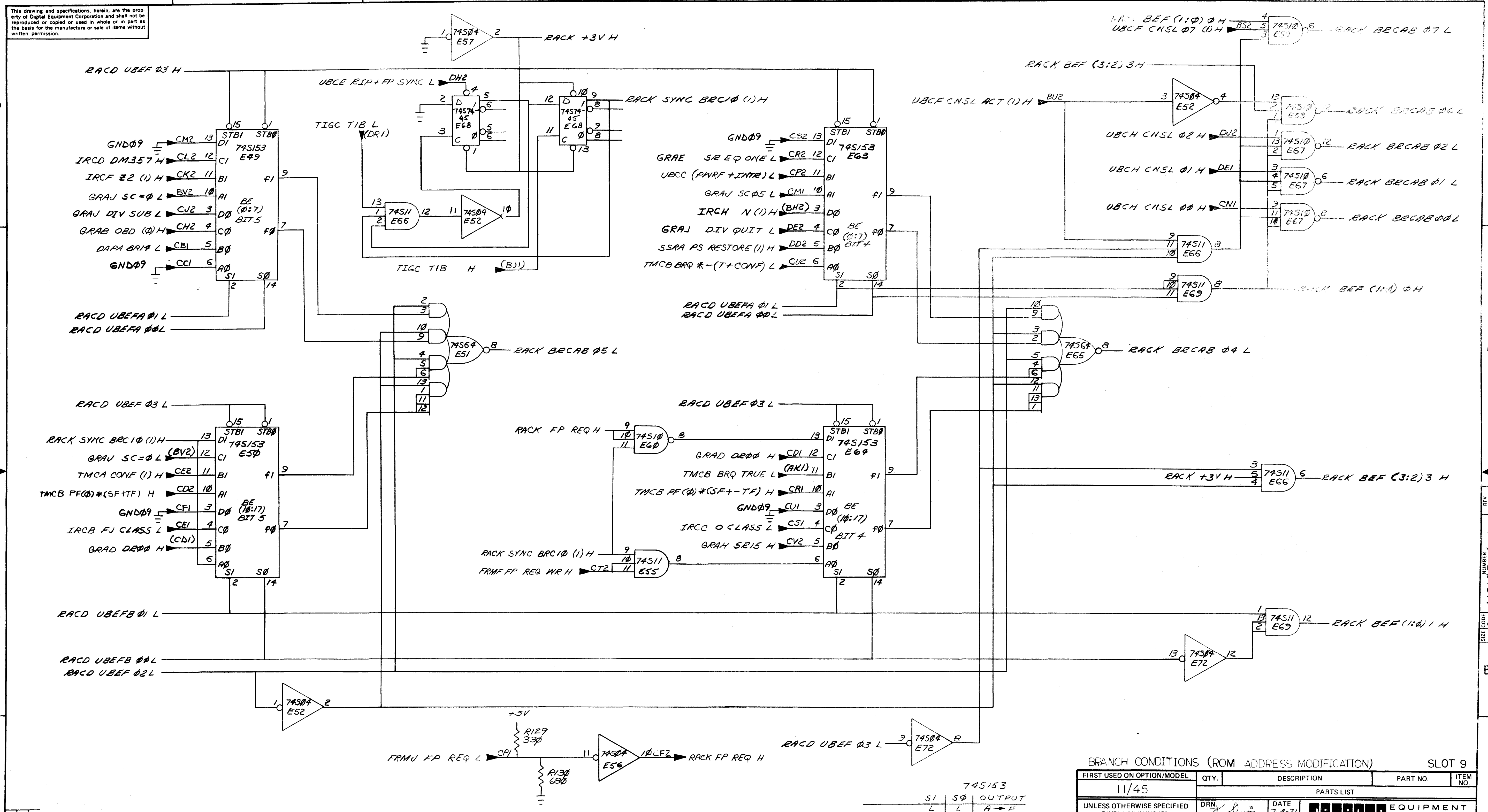
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE ROM & ROM CONTROL (RAC J)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8103-Ø-1 | H |

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| | S1 | SØ | OUTPUT |
|---|---|---|---|
| STB=L | L | L | A→F |
| | L | H | B→F |
| | H | L | C→F |
| | H | H | D→F |
| STB=H | X | X | F=L |

74S153

BRANCH CONDITIONS (ROM ADDRESS MODIFICATION) SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH —/—

DRN. DATE 7-8-71
CHK'D. DATE 3/21/72
ENG. DATE 3-21-72
PROJ. ENG. DATE 3-21-72
PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-Ø

DIGITAL EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

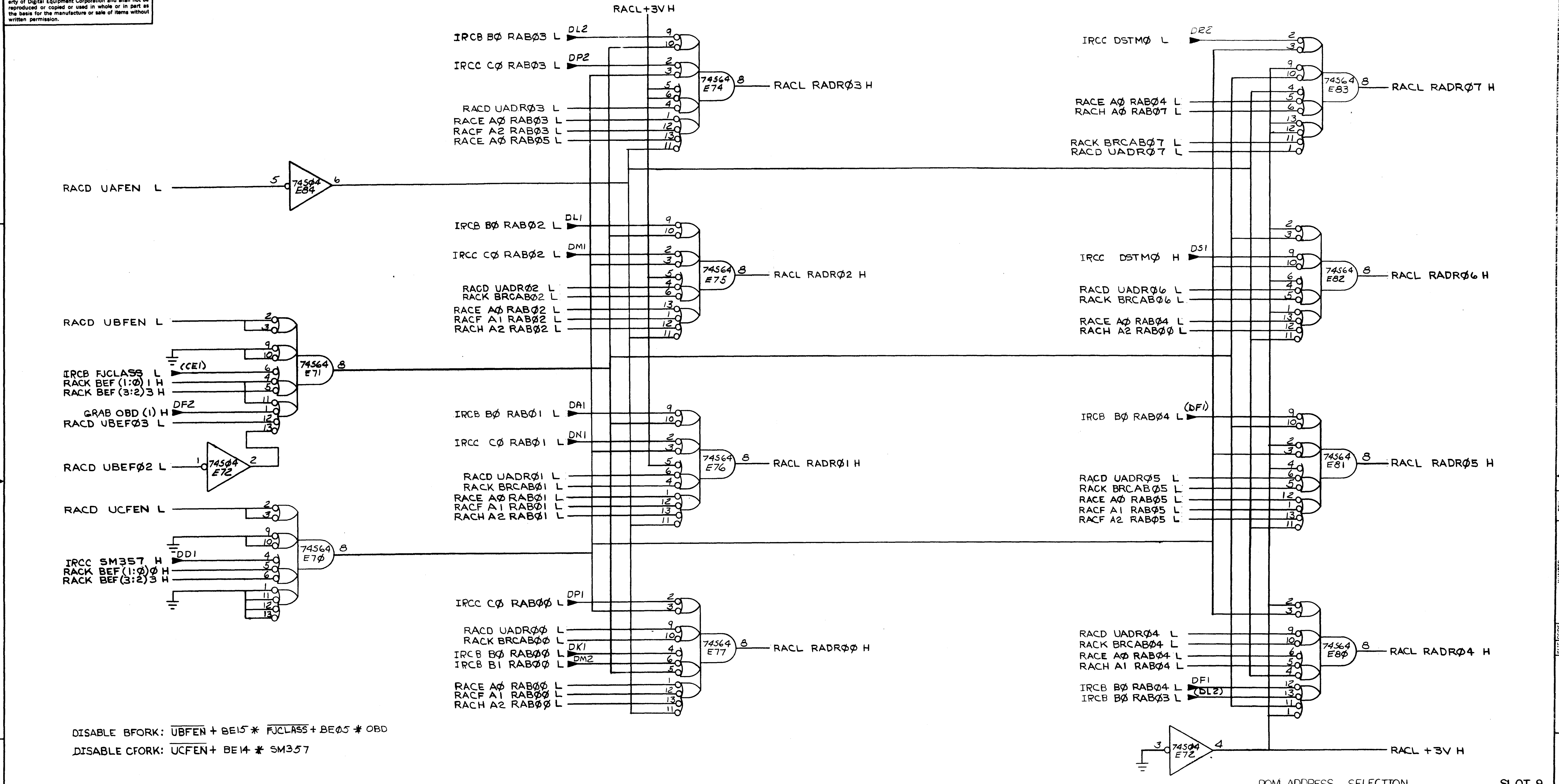
TITLE ROM & ROM CONTROL (RACK)

SIZE D CODE CS NUMBER M81Ø3-Ø-1 REV. H

SCALE —/— SHEET 1Ø OF 15 DIST

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ROM ADDRESS SELECTION

SLOT 9

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. DATE 7-8-71
CHKD. DATE
ENG. DATE 3-21-72
PROJ. ENG. DATE 3-21-72
PROD. DATE

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —//—

SHEET 11 OF 15

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: ROM & ROM CONTROL (RACL)

SIZE D CODE CS NUMBER M81Ø3-Ø-1 REV. H

DIST.

REVISIONS — REV — CHANGE NO. — CHK

DEC FORM NO DRD 102-B

D CS M81Ø3-Ø-1

D CS M81Ø3-Ø-1 H

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PAD | BSD | BAX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | RSD,00 | 000 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 00 | 345 |
| 5 | D12,00 | 001 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 2 | 0 | 0 | 2 | 0 | 15 | 115 |
| 5 | D12,01 | 002 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 2 | 0 | 0 | 2 | 0 | 15 | 115 |
| 5 | D30,00 | 003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 221 |
| 6 | D45,00 | 004 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 2 | 0 | 2 | 5 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 01 | 122 |
| 6 | D45,01 | 005 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 2 | 0 | 2 | 5 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 01 | 122 |
| 6 | D67,00 | 006 | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 251 |
| 6 | D67,01 | 007 | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 251 |
| 3 | HLT,00 | 010 | 1 | 1 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 327 |
| 3 | WAT,00 | 011 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 244 |
| 2 | RTI,00 | 012 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 156 |
| 12 | TRP,01 | 013 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 00 | 354 |
| 12 | TRP,02 | 014 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 00 | 354 |
| 3 | RES,00 | 015 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 255 |
| 2 | RTI,01 | 016 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 156 |
| 12 | RSD,01 | 017 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 00 | 345 |
| 3 | EXC,80 | 020 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 1 | 5 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 7 | 0 | 00 | 343 |
| 1 | S13,00 | 021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 1 | 2 | 0 | 2 | 3 | 0 | 00 | 027 |
| 1 | S13,01 | 022 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 1 | 2 | 0 | 2 | 3 | 0 | 00 | 027 |
| 1 | S45,10 | 023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 00 | 027 |
| 1 | S45,00 | 024 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 2 | 6 | 0 | 00 | 023 |
| 13 | SVC,60 | 025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 0 | 0 | 1 | 6 | 0 | 00 | 041 |
| 2 | S67,00 | 026 | 1 | 1 | 2 | 2 | 1 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 054 |
| 1 | S13,10 | 027 | 1 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 3 | 2 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 4 | 14 | 317 |
| 3 | EXC,90 | 030 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 0 | 2 | 0 | 7 | 0 | 00 | 217 |
| 11 | EXC,00 | 031 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 3 | 2 | 0 | 7 | 0 | 00 | 132 |
| 11 | TST,00 | 032 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 3 | 2 | 0 | 7 | 0 | 00 | 217 |
| 11 | TST,10 | 033 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 3 | 2 | 0 | 7 | 0 | 12 | 240 |
| 11 | JSR,00 | 034 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 201 |
| 11 | JMP,00 | 035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 217 |
| 7 | FOP,40 | 036 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 225 |
| 13 | SVC,50 | 037 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 00 | 025 |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PAD | BSD | BAX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | RTS,00 | 040 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 223 |
| 13 | SVC,70 | 041 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 2 | 0 | 00 | 222 |
| 12 | RSD,02 | 042 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 00 | 345 |
| 3 | SPL,00 | 043 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 4 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 361 |
| 3 | CCP,00 | 044 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 217 |
| 1 | MTP,00 | 045 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 151 |
| 11 | MFP,80 | 046 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 304 |
| 2 | MRK,00 | 047 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 1 | 1 | 2 | 3 | 0 | 00 | 252 |
| 3 | MUL,80 | 050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 102 |
| 3 | DVS,00 | 051 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 061 |
| 7 | ASH,10 | 052 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 7 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 305 |
| 7 | ASC,10 | 053 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 1 | 0 | 2 | 7 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 306 |
| 2 | S67,10 | 054 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 | 00 | 141 |
| 9 | DVN,40 | 055 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 00 | 056 |
| 9 | DVN,50 | 056 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 306 |
| 2 | SOB,00 | 057 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 2 | 6 | 0 | 01 | 242 |
| 8 | MUL,00 | 060 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 3 | 0 | 0 | 2 | 0 | 00 | 102 |
| 9 | DIV,00 | 061 | 0 | 0 | 0 | 1 | 1 | 3 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 2 | 0 | 00 | 254 |
| 7 | ASH,00 | 062 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 2 | 0 | 00 | 052 |
| 7 | ASC,00 | 063 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 2 | 0 | 00 | 053 |
| 11 | SHR,00 | 064 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 7 | 0 | 00 | 123 |
| 13 | SVC,10 | 065 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 00 | 357 |
| 11 | MFP,00 | 066 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 2 | 0 | 00 | 250 |
| 11 | NEG,00 | 067 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 7 | 0 | 00 | 271 |
| 14 | EXM,10 | 070 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 153 |
| 14 | EXM,00 | 071 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 070 |
| 14 | RAD,00 | 072 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 314 |
| 14 | DEP,10 | 073 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 7 | 5 | 3 | 0 | 0 | 2 | 0 | 00 | 303 |
| 14 | DEP,00 | 074 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 073 |
| 14 | RDP,00 | 075 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 307 |
| 14 | KST,00 | 076 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 015 |
| 14 | CON,10 | 077 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 130 |

| | | |
|---|---|---|
| DRN [signature] | DATE 3/23/72 | TITLE |
| CHK'D [signature] | DATE 3/23/72 | ROM & ROM CONTROL |
| ENG Steve Jenkins | DATE 3-28-72 | |
| PROJ ENG E. Eriksen | DATE 3-28-72 | (ADR 000-077) |
| PROD [signature] | DATE 3-30-72 | SIZE K · CODE CS · NUMBER M 810[illegible]-0-1 · REV. H |
| SHEET 12 OF 15 | | |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PĀD | BSD | BĀX | ĪBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UĀD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | PUP,ØØ | 1ØØ | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 6 | Ø | Ø | Ø | 1 | Ø | 1 | Ø | ØØ | 347 |
| 2 | FOP,ØØ | 1Ø1 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 1 | 1 | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 7 | 1 | Ø | 1 | Ø | 1 | 6 | Ø | ØØ | 133 |
| 8 | MUL,1Ø | 1Ø2 | 1 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | 3 | 3 | Ø | 6 | Ø | 11 | 246 |
| 9 | DVP,1Ø | 1Ø3 | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | 4 | Ø | 2 | Ø | 3 | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | ØØ | 147 |
| 9 | DVN,1Ø | 1Ø4 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 2 | 4 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 6 | Ø | ØØ | 1Ø5 |
| 9 | DVN,2Ø | 1Ø5 | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 6 | Ø | ØØ | 1Ø6 |
| 9 | DVN,3Ø | 1Ø6 | Ø | Ø | 1 | Ø | 1 | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 6 | Ø | ØØ | Ø55 |
| 9 | DVN,7Ø | 1Ø7 | Ø | Ø | Ø | 1 | Ø | 3 | 4 | Ø | Ø | 2 | Ø | Ø | 4 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | ØØ | 147 |
| 5 | D12,9Ø | 11Ø | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | Ø | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 6 | 3 | Ø | Ø | 2 | Ø | 15 | 135 |
| 5 | D12,8Ø | 111 | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 6 | 3 | Ø | Ø | 2 | Ø | 15 | 115 |
| 5 | D3Ø,9Ø | 112 | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | Ø | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 221 |
| 5 | D3Ø,8Ø | 113 | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 221 |
| 6 | D45,9Ø | 114 | Ø | Ø | Ø | Ø | Ø | 3 | 3 | 1 | 3 | 2 | Ø | 2 | 5 | Ø | Ø | Ø | Ø | Ø | 6 | Ø | Ø | Ø | 3 | 6 | Ø | Ø1 | 131 |
| 6 | D45,8Ø | 115 | Ø | Ø | Ø | Ø | Ø | 3 | 3 | 1 | 3 | 2 | Ø | 2 | 5 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 3 | 6 | Ø | Ø1 | 121 |
| 6 | D67,9Ø | 116 | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | Ø | Ø | Ø | [illegible] | Ø | 1 | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | ØØ6 |
| 6 | D67,8Ø | 117 | Ø | Ø | Ø | Ø | 1 | Ø | 3 | Ø | Ø | 2 | Ø | Ø | [illegible] | Ø | 1 | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | ØØ6 |
| 12 | BRK,2Ø | 12Ø | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 6 | Ø | 1 | 3 | Ø | 6 | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø2 | 152 |
| 6 | D4Ø,2Ø | 121 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 6 | 3 | Ø | Ø | 2 | 2 | 15 | 157 |
| 6 | D1Ø,3Ø | 122 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 6 | 2 | Ø | Ø | 2 | 2 | 15 | 157 |
| 11 | SHR,1Ø | 123 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 7 | 3 | Ø | Ø | 2 | Ø | ØØ | 132 |
| 12 | TRP,Ø2 | 124 | 1 | 1 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | 3 | Ø | 7 | Ø | Ø | Ø | 1 | 1 | 1 | Ø | ØØ | 354 |
| 1Ø | DVC,ØØ | 125 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 2 | 4 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 2 | Ø | 16 | 216 |
| 1 | FET,Ø5 | 126 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | 1 | Ø | Ø | Ø | 1 | Ø | Ø | 3 | 7 | Ø | 2 | 2 | Ø | 6 | Ø | 12 | 24Ø |
| 3 | WAT,3Ø | 127 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 2 | Ø | Ø2 | 253 |
| 12 | BRK,1Ø | 13Ø | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 2 | Ø | 13 | 1ØØ |
| 6 | D4Ø,3Ø | 131 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 6 | 3 | Ø | Ø | 2 | 2 | 15 | 177 |
| 11 | EXC,1Ø | 132 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | Ø | 6 | 7 | 3 | Ø | Ø | 2 | Ø | ØØ | 217 |
| 2 | FOP,1Ø | 133 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 2 | Ø | Ø7 | 154 |
| 14 | EXM,3Ø | 134 | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 23Ø |
| 5 | D12,7Ø | 135 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | 3 | 2 | Ø | 2 | 5 | Ø | Ø | Ø | Ø | 7 | 6 | Ø | Ø | Ø | 3 | 3 | 2 | ØØ | 137 |
| 7 | ASC,61 | 136 | Ø | Ø | Ø | Ø | Ø | Ø | 6 | Ø | Ø | 2 | Ø | 2 | 4 | Ø | 1 | Ø | Ø | Ø | 7 | Ø | Ø | Ø | Ø | 2 | Ø | 12 | 24Ø |
| 5 | D12,3Ø | 137 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 6 | 3 | Ø | Ø | 2 | 2 | ØØ | 377 |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PĀD | BSD | BĀX | ĪBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UĀD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | BRK,8Ø | 14Ø | 1 | 1 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | 3 | Ø | Ø | Ø | Ø | Ø | 1 | 1 | 1 | Ø | ØØ | 152 |
| 2 | S67,2Ø | 141 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 6 | Ø | 2 | Ø | Ø | Ø | 7 | 1 | Ø | Ø | Ø | Ø | Ø | ØØ | 142 |
| 2 | S67,3Ø | 142 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | 3 | 2 | Ø | Ø | Ø | 6 | 1 | Ø | Ø | Ø | Ø | 4 | 14 | 317 |
| 2 | S13,3Ø | 143 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 6 | Ø | 2 | Ø | Ø | Ø | 7 | 3 | Ø | Ø | Ø | Ø | Ø | ØØ | 146 |
| 1Ø | DVD,ØØ | 144 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 2 | Ø | Ø4 | 353 |
| 9 | DVE,2Ø | 145 | Ø | Ø | Ø | Ø | Ø | Ø | 7 | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 6 | Ø | Ø | Ø | Ø | 2 | Ø | ØØ | 164 |
| 2 | S13,4Ø | 146 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | 3 | 2 | Ø | Ø | Ø | 6 | 3 | Ø | Ø | Ø | Ø | 4 | ØØ | 377 |
| 9 | DIV,3Ø | 147 | 1 | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 7 | Ø | 16 | 346 |
| 12 | FSV,1Ø | 15Ø | 1 | 1 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | Ø | 1 | 4 | Ø | Ø | 1 | 3 | Ø | ØØ | 225 |
| 1 | MTP,1Ø | 151 | Ø | Ø | Ø | 2 | Ø | 3 | Ø | Ø | Ø | 1 | Ø | Ø | 5 | Ø | 2 | Ø | Ø | Ø | 7 | 3 | Ø | Ø | Ø | Ø | Ø | ØØ | 146 |
| 12 | BRK,3Ø | 152 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | 2 | Ø | Ø | 6 | Ø | Ø | Ø | Ø | 6 | 7 | 2 | 3 | Ø | Ø | 2 | Ø | ØØ | 355 |
| 14 | EXM,2Ø | 153 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 3 | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | ØØ | 134 |
| 12 | BRK,ØØ | 154 | 1 | 1 | Ø | Ø | 1 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 1 | 1 | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 2 | Ø | 12 | 13Ø |
| 5 | D12,6Ø | 155 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | 3 | 2 | Ø | 2 | 5 | 3 | Ø | Ø | Ø | Ø | 6 | 6 | Ø | Ø | 3 | 3 | Ø | ØØ | 312 |
| 2 | RTI,1Ø | 156 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 7 | Ø | 2 | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 212 |
| 6 | D1Ø,4Ø | 157 | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 2 | Ø | Ø | Ø | 3 | Ø | Ø | Ø | Ø | 6 | 6 | 3 | Ø | Ø | 2 | Ø | ØØ | 331 |
| 12 | SER,ØØ | 16Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | 1 | Ø | ØØ | 344 |
| 6 | D5Ø,2Ø | 161 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 231 |
| 6 | D1Ø,ØØ | 162 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | Ø | Ø | Ø | Ø | Ø | Ø | ØØ | 231 |
| 11 | NEG,2Ø | 163 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | 7 | 3 | Ø | Ø | 2 | Ø | ØØ | 132 |
| 1 | FET,Ø4 | 164 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | 1 | Ø | Ø | Ø | 1 | Ø | Ø | 3 | 7 | Ø | 2 | 2 | Ø | 6 | Ø | 12 | 24Ø |
| 9 | DIV,7Ø | 165 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 7 | Ø | Ø4 | 323 |
| 7 | ASH,41 | 166 | Ø | Ø | Ø | Ø | 1 | Ø | 5 | Ø | Ø | 2 | Ø | 2 | Ø | Ø | 1 | Ø | 1 | Ø | 6 | Ø | 2 | Ø | Ø | 5 | Ø | Ø3 | 126 |
| 14 | CON,Ø1 | 167 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 2 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 14 | Ø7Ø |
| 14 | CON,ØØ | 17Ø | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 2 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | 14 | Ø7Ø |
| 6 | D5Ø,3Ø | 171 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 5 | Ø | Ø | Ø | Ø | Ø | 7 | Ø | 3 | Ø | Ø | 2 | Ø | ØØ | 231 |
| 2 | RTI,6Ø | 172 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | 6 | Ø | Ø | Ø | Ø | Ø | Ø | ØØ | 217 |
| 2 | FOP,3Ø | 173 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | 1 | 1 | 2 | Ø | Ø | Ø | Ø | 3 | Ø | Ø | 1 | Ø | Ø | 1 | Ø | 1 | 3 | 4 | ØØ | 377 |
| 2 | FOP,2Ø | 174 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | Ø | Ø | 6 | Ø | 3 | Ø | Ø | 2 | Ø | 1Ø | 133 |
| 5 | D12,1Ø | 175 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | 1 | 3 | 2 | Ø | 2 | 5 | 2 | Ø | Ø | Ø | Ø | 6 | 6 | Ø | Ø | 3 | 3 | 2 | Ø5 | 137 |
| 7 | ASC,31 | 176 | Ø | Ø | Ø | Ø | 1 | 2 | 5 | Ø | Ø | 2 | Ø | 2 | Ø | Ø | Ø | Ø | 1 | Ø | 6 | Ø | 2 | Ø | Ø | 7 | Ø | Ø3 | 136 |
| 6 | D1Ø,6Ø | 177 | 1 | 1 | Ø | Ø | Ø | Ø | Ø | Ø | Ø | 2 | Ø | Ø | Ø | 2 | Ø | Ø | Ø | Ø | 6 | 6 | 3 | Ø | Ø | 2 | 2 | Ø5 | 137 |

| | | |
|---|---|---|
| DRN. [signature] | DATE 3/23/72 | TITLE ROM & ROM CONTROL (ADR 1ØØ-177) |
| CHK'D. [signature] | DATE 3/23/72 | |
| ENG. Steve Jenkins | DATE 3-28-72 | |
| PROJ. ENG. E. Eriksen | DATE 3-28-72 | |
| PROD. A. Hursch | DATE 3-30-72 | SIZE K · CODE CS · NUMBER M 8103-Ø-1 · REV. H |
| SHEET 13 OF 15 | | |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PĀD | BSD | BĀX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UĀD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | ZAP,00 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 06 | 352 |
| 11 | JSR,10 | 201 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 274 |
| 4 | D07,00 | 202 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 030 |
| 4 | D07,10 | 203 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 030 |
| 4 | D00,80 | 204 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 205 |
| 4 | D00,90 | 205 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 3 | 0 | 7 | 0 | 12 | 240 |
| 8 | MUL,40 | 206 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 310 |
| 7 | ASC,80 | 207 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 240 |
| 3 | NEG,90 | 210 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 0 | 1 | 5 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 3 | 0 | 00 | 217 |
| 4 | FOP,50 | 211 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 362 |
| 2 | RTI,20 | 212 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 213 |
| 2 | RTI,30 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 214 |
| 2 | RTI,40 | 214 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 00 | 215 |
| 2 | RTI,50 | 215 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 172 |
| 10 | DVC,10 | 216 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 0 | 00 | 256 |
| 1 | FET,00 | 217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 10 | DVC,90 | 220 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 04 | 144 |
| 5 | D30,10 | 221 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 2 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 00 | 233 |
| 13 | SVC,80 | 222 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 00 | 300 |
| 2 | RTS,10 | 223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 2 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 224 |
| 2 | RTS,20 | 224 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 342 |
| 12 | FSV,20 | 225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 205 |
| 8 | MUL,50 | 226 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 2 | 0 | 7 | 0 | 00 | 310 |
| 7 | ASC,60 | 227 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 240 |
| 14 | CON,20 | 230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 170 |
| 6 | D10,10 | 231 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 233 |
| 9 | DIV,20 | 232 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 04 | 241 |
| 6 | D10,20 | 233 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 311 |
| 2 | MRK,30 | 234 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 2 | 0 | 12 | 240 |
| 2 | MRK,20 | 235 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 3 | 0 | 00 | 234 |
| 10 | DVC,20 | 236 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 6 | 0 | 00 | 276 |
| 1 | FET,07 | 237 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PĀD | BSD | BĀX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UĀD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | BRK,90 | 240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 154 |
| 9 | DVP,00 | 241 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 103 |
| 2 | SOB,10 | 242 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 262 |
| 9 | DVN,60 | 243 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 107 |
| 3 | WAT,20 | 244 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 12 | 127 |
| 12 | FSV,00 | 245 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 00 | 150 |
| 8 | MUL,30 | 246 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 11 | 206 |
| 7 | ASC,30 | 247 | 0 | 0 | 0 | 0 | 1 | 2 | 5 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 7 | 0 | 03 | 136 |
| 11 | MFP,10 | 250 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 1 | 6 | 0 | 00 | 222 |
| 6 | D67,10 | 251 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 0 | 3 | 0 | 01 | 122 |
| 2 | MRK,10 | 252 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 235 |
| 12 | BRK,11 | 253 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 13 | 100 |
| 9 | DIV,10 | 254 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 02 | 232 |
| 3 | RES,10 | 255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 374 |
| 10 | DVC,30 | 256 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 04 | 350 |
| 7 | ASH,40 | 257 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 5 | 0 | 03 | 126 |
| 1 | FET,10 | 260 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 343 |
| 9 | DVN,00 | 261 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 104 |
| 2 | SOB,20 | 262 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 6 | 0 | 12 | 240 |
| 9 | DVE,10 | 263 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 145 |
| 3 | WAT,10 | 264 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 011 |
| 1 | FET,09 | 265 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 8 | MUL,20 | 266 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 0 | 11 | 206 |
| 7 | ASC,40 | 267 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 03 | 227 |
| 14 | ADR,00 | 270 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 230 |
| 11 | NEG,10 | 271 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 3 | 0 | 05 | 123 |
| 9 | DVE,00 | 272 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 164 |
| 3 | WAT,11 | 273 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 011 |
| 11 | JSR,20 | 274 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 00 | 275 |
| 11 | JSR,30 | 275 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 00 | 300 |
| 10 | DVC,40 | 276 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 04 | 351 |
| 7 | ASH,30 | 277 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 03 | 237 |

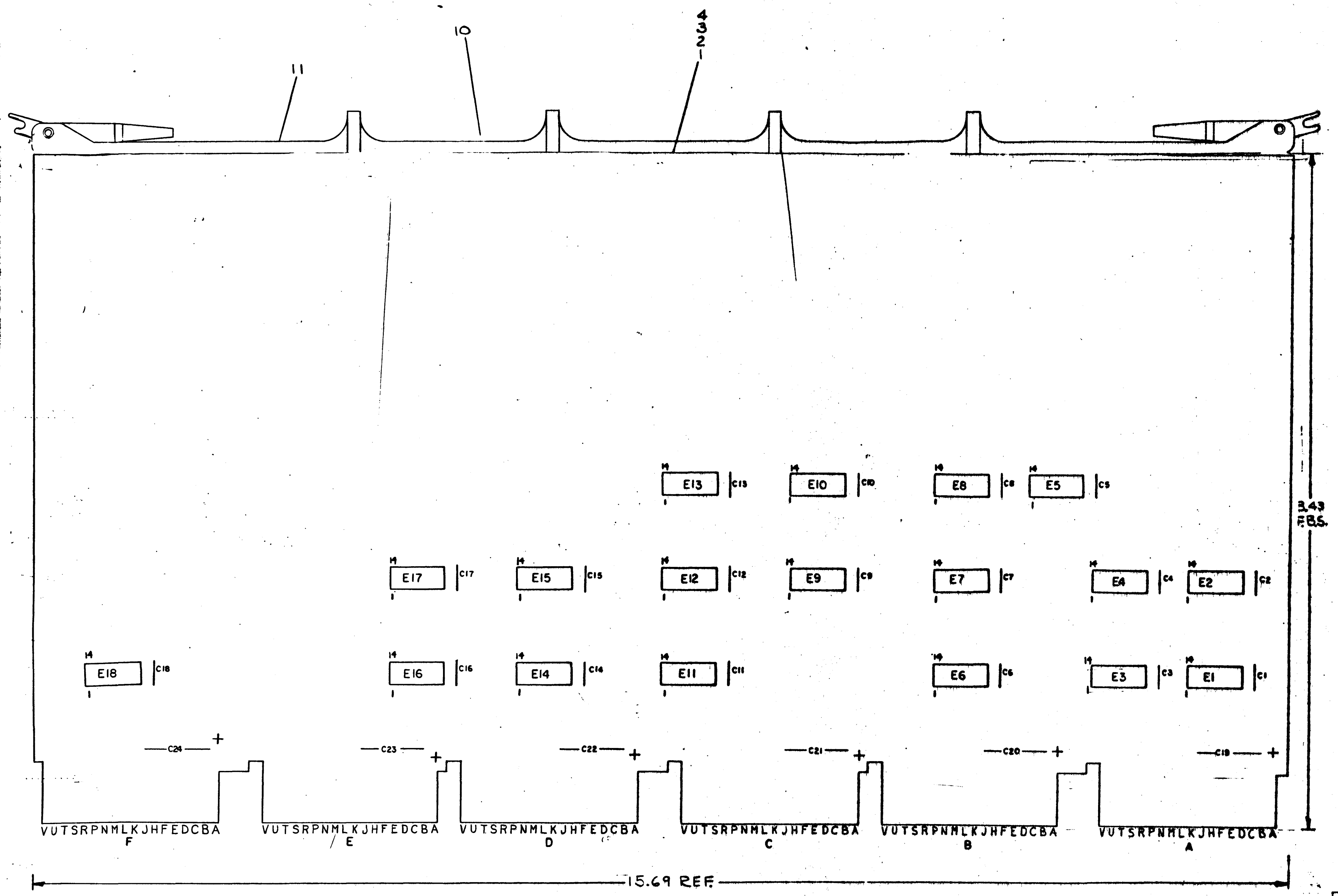
| | | | |
|---|---|---|---|
| DRN. [signature] | DATE 3/23/72 | TITLE | |
| CHK'D [signature] | DATE 3/23/72 | ROM & ROM CONTROL | |
| ENG. Steve Jenkins | DATE 3-28-72 | | |
| PROJ. ENG. E. Eriksen | DATE 3-28-72 | (ADR 200-277) | |
| PROD. [signature] | DATE 3-30-72 | SIZE K / CODE CS / NUMBER M8103-0-1 | REV H |
| SHEET 14 OF 15 | | | |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PAD | BSD | BAX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | SVC,90 | 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 5 | 3 | 0 | 0 | 2 | 0 | 00 | 217 |
| 3 | NEG,70 | 301 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 00 | 210 |
| 12 | ZAP,30 | 302 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 154 |
| 14 | DEP,20 | 303 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 2 | 0 | 00 | 230 |
| 11 | MFP,90 | 304 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 250 |
| 7 | ASH,20 | 305 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 03 | 217 |
| 7 | ASC,20 | 306 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 03 | 207 |
| 14 | RDP,10 | 307 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 3 | 2 | 0 | 2 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 30 | 230 |
| 8 | MUL,60 | 310 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 240 |
| 6 | D10,50 | 311 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 2 | 0 | 0 | 2 | 2 | 15 | 157 |
| 5 | D12,20 | 312 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 2 | 0 | 12 | 240 |
| 9 | DIV,60 | 313 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 05 | 145 |
| 14 | RAD,10 | 314 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 230 |
| 12 | ZAP,20 | 315 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 302 |
| 4 | FOP,70 | 316 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 17 | 316 |
| 2 | S13,20 | 317 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 143 |
| 1 | BXX,00 | 320 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 1 | FET,11 | 321 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 343 |
| 1 | FET,12 | 322 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 343 |
| 9 | DIV,80 | 323 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 6 | 0 | 03 | 125 |
| 1 | FET,13 | 324 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 3 | 0 | 00 | 343 |
| 1 | BXX,01 | 325 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 1 | BXX,02 | 326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 3 | HLT,10 | 327 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 0 | 06 | 124 |
| 1 | BXX,03 | 330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 1 | FET,01 | 331 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 1 | FET,02 | 332 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 12 | PUP,20 | 333 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 00 | 340 |
| 1 | FET,03 | 334 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 1 | BXX,04 | 335 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 1 | BXX,05 | 336 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 00 | 217 |
| 13 | XXX,XX | 337 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 337 |

| FLOWS | STATE | ADR | BRK | BRX | SRX | DRX | SRK | DRK | CCL | PCA | PCB | SHF | IRK | PWE | PAD | BSD | BAX | IBS | SHC | BCT | MSC | BSC | AMX | BMX | KMX | ALU | FEN | BEN | UAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | PUP,30 | 340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 341 |
| 12 | PUP,40 | 341 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 215 |
| 2 | RTS,30 | 342 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 2 | 5 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 217 |
| 1 | IRD,00 | 343 | 0 | 0 | 2 | 2 | 1 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 1 | 3 | 1 | 00 | 377 |
| 12 | SER,10 | 344 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 00 | 140 |
| 12 | RSD,10 | 345 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 00 | 354 |
| 9 | DIV,40 | 346 | 1 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 6 | 0 | 00 | 313 |
| 12 | PUP,10 | 347 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 1 | 0 | 00 | 333 |
| 10 | DVC,70 | 350 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 164 |
| 10 | DVC,80 | 351 | 0 | 0 | 1 | 0 | 1 | 3 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 220 |
| 12 | BRK,01 | 352 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 12 | 130 |
| 10 | DVD,10 | 353 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 00 | 145 |
| 12 | TRP,10 | 354 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 3 | 0 | 0 | 2 | 0 | 00 | 355 |
| 13 | SVC,00 | 355 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 3 | 0 | 00 | 065 |
| 1 | FET,08 | 356 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 13 | SVC,20 | 357 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 2 | 0 | 00 | 360 |
| 13 | SVC,30 | 360 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 02 | 367 |
| 3 | SPL,10 | 361 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 260 |
| 4 | FOP,60 | 362 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 316 |
| 9 | DIV,90 | 363 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 0 | 03 | 125 |
| 13 | XXX,XX | 364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 364 |
| 13 | XXX,XX | 365 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 365 |
| 9 | DIV,50 | 366 | 1 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 0 | 00 | 313 |
| 13 | SVC,40 | 367 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 037 |
| 10 | DVC,50 | 370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 00 | 351 |
| 10 | DVC,60 | 371 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 00 | 350 |
| 12 | ZAP,10 | 372 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 315 |
| 1 | FET,06 | 373 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 | 2 | 2 | 0 | 6 | 0 | 12 | 240 |
| 3 | RES,20 | 374 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 10 | 334 |
| 4 | FOP,90 | 375 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 5 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 316 |
| 4 | FOP,80 | 376 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 00 | 375 |
| 13 | XXX,XX | 377 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 00 | 377 |

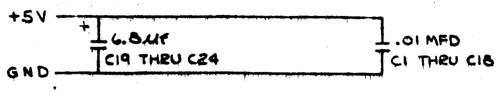
| DRN. | DATE 3/23/72 | TITLE |
|---|---|---|
| CHK'D | DATE 3/23/72 | ROM & ROM CONTROL |
| ENG. | DATE 3-28-72 | |
| PROJ. ENG. | DATE 3-28-72 | (ADR 300 - 377) |
| PROD. | DATE 3-30-72 | SIZE K · CODE CS · NUMBER M 8103-0-1 · REV. H |
| SHEET 15 OF 15 | | |

NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED ARE .01, MFD.




AA2, AV1, BA2, BV1, CA2, CV1, DA2, DV1, EA2, EV1, FA2, FV1

AC2, AN2, AT1
BC2, BN2, BT1
CC2, CN2, CT1
DC2, DN2, DT1
EC2, EN2, ET1
FC2




| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 11 |
| 12 | | EYELET | 9006732 | 10 |
| 6 | E1, E2, E8, E10, E14, E17 | IC DEC 74S11 | 1910537 | 9 |
| 5 | E6, E7, E9, E11, E12 | IC DEC 8881 | 1909705 | 8 |
| 7 | E3, E4, E5, E13, E15, E16, E18 | IC DEC 7404 | 1909686 | 7 |
| 18 | C1 THRU C18 | CAPACITOR .01μf, 100V, 20% DISC | 1001610 | 6 |
| 6 | C19 THRU C24 | CAPACITOR 6.8μf, 35V, 20% | 1005306 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009950 | 4 |
| REF | | MODULE ECO HISTORY | B-MH-M8116-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M8116-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8116-0-4 | 1 |

PARTS LIST

ETCH BOARD REV A B C

| IC TYPE | GND | +5V |
|---|---|---|
| | | |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|
| | | | |

JUMPER LIST

REVISIONS: A — M8116-00001 — R.C. GRAY — 2/24/72; B — M8116-00002 — 11/5/72

| DEC NO. | EIA NO. | DEC NO. | EIA NO. |
|---|---|---|---|
| | | | |

SEMICONDUCTOR CONVERSION CHART

DRN K.D. DATE 2-17-72
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE
NEXT HIGHER ASSY B-CD-11/45-C
SCALE 2/1
SHEET 1 OF 3

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE SYSTEM ADDRESS BUFFERS

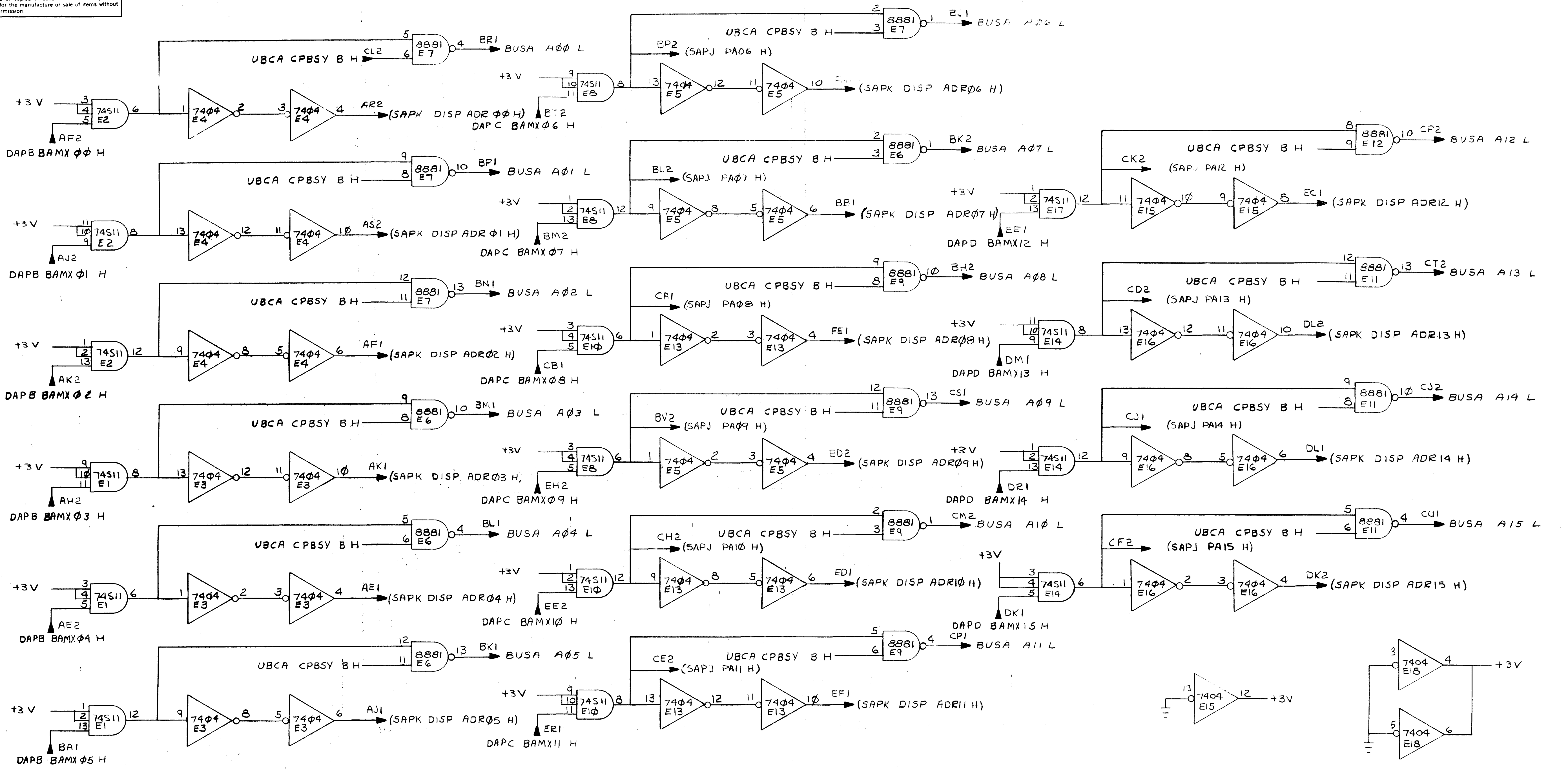
SIZE E CODE CS NUMBER M8116-0-1 REV. B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

DEC FORM NO. DRE 104

E-CS-M8116-0-1

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




ADDRESS LINES Ø - 15

SLOT 14

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. — DATE 11-15-71
CHK'D. — DATE 3/2/72
ENG. — DATE 3/2/72
PROJ. ENG. — DATE 3/2/72
PROD. — DATE 3/15/72

NEXT HIGHER ASSY. B-DD-11-45-Ø

SCALE —

SHEET 2 OF 3

**digital** EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
# SYSTEM ADDRESS BUFFERS
(SJBA)

SIZE D CODE CS NUMBER M-116-Ø-1 REV B

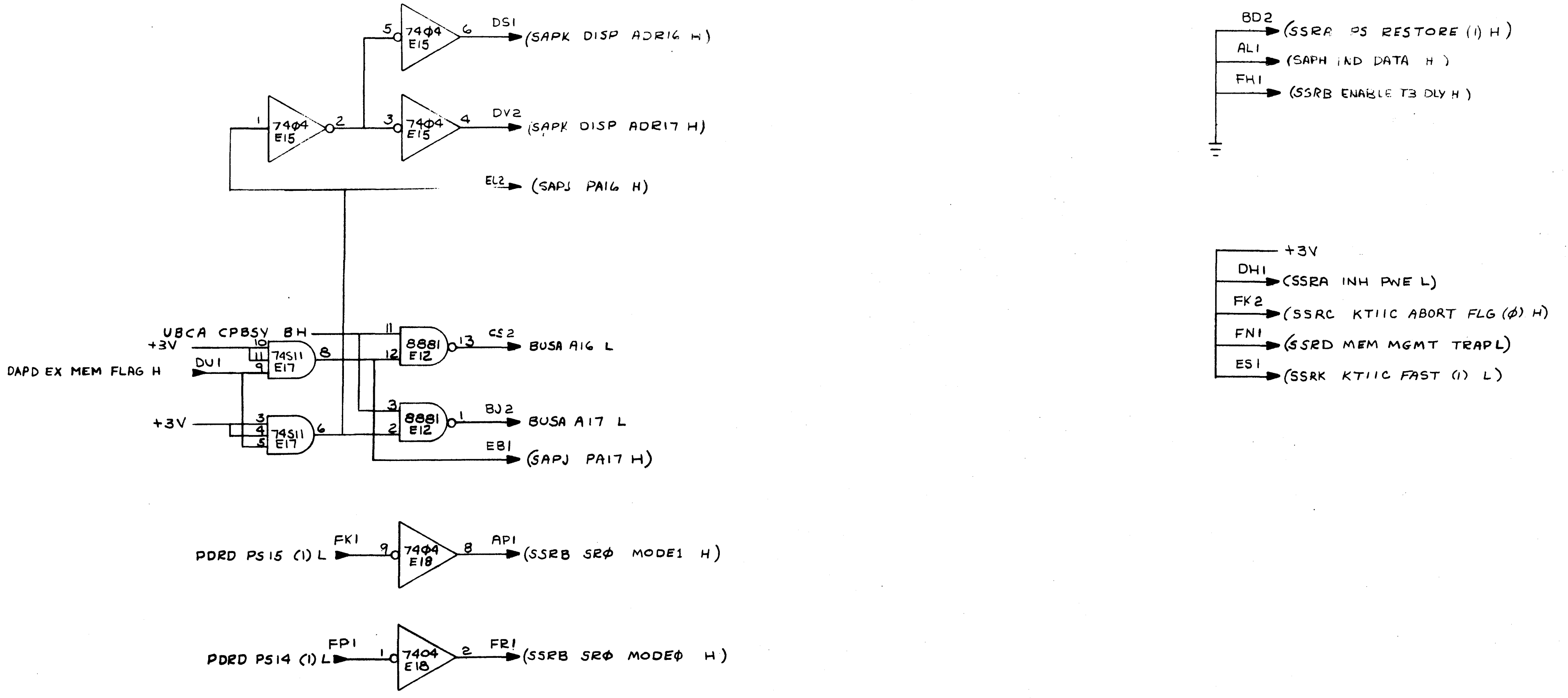
DIST

REVISIONS | REV | CHANGE NO | CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




MISC. SIGNALS AND ADRS. LINES 16 & 17

SLOT 14

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN. DATE 11-18-71 · CHK'D. DATE · ENG. DATE · PROJ. ENG. DATE · PROD. DATE

NEXT HIGHER ASSY. B-DD-11/45-0
SCALE — SHEET 3 OF 3

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

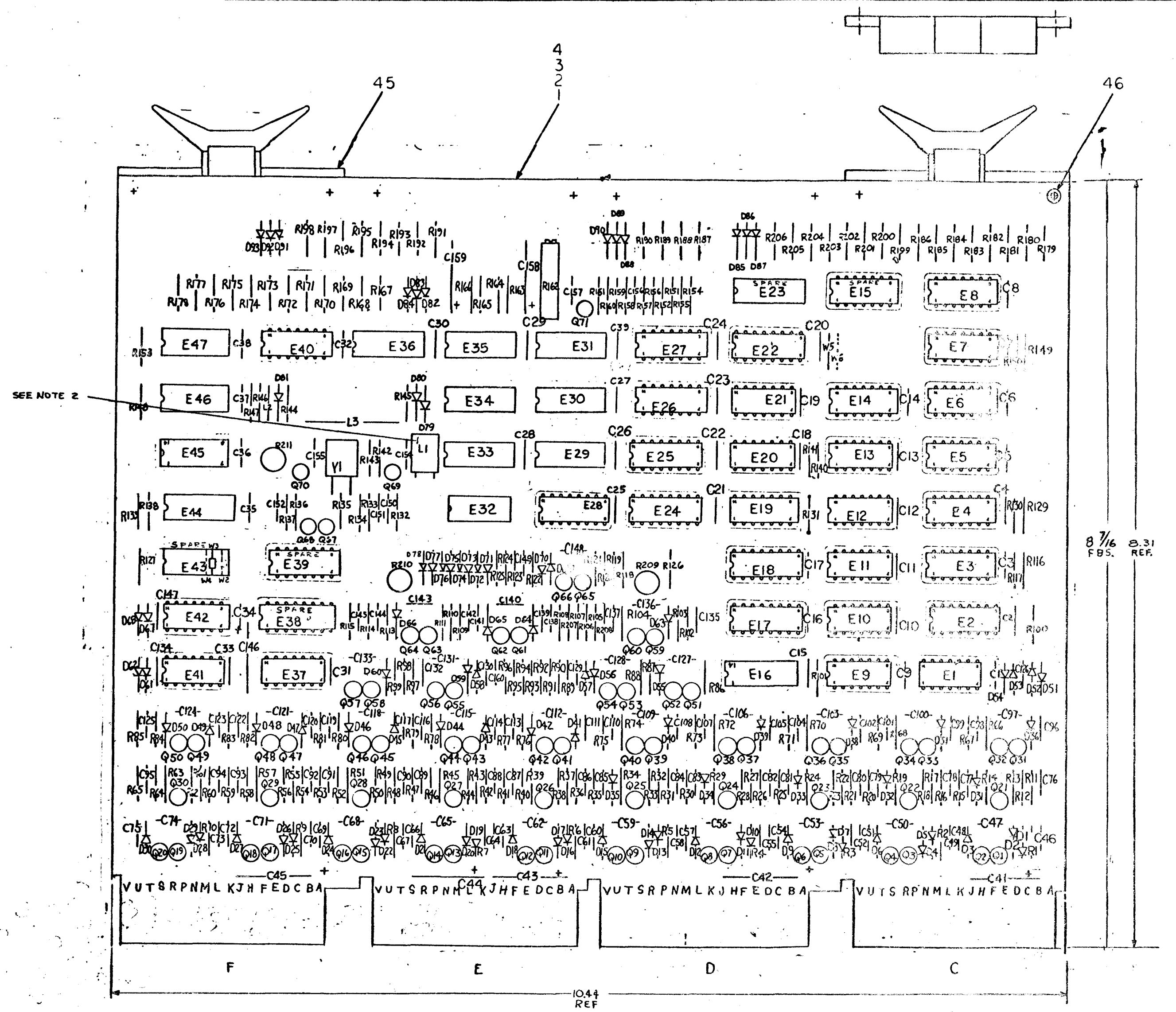
TITLE SYSTEM ADDRESS BUFFERS (SJBB)

SIZE D CODE CS NUMBER M8116-Ø-1 REV. B

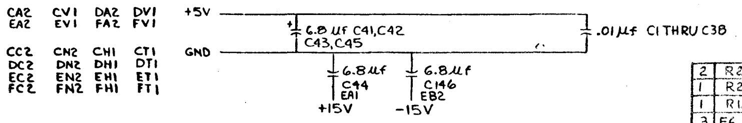
DIST.

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO DRD 102-B




NOTES:
1. UNLESS OTHERWISE NOTED: RESISTANCE IS IN Ω, CAPACITANCE IS IN PICOFARADS. CAPS WITHOUT VALUE NOTED ARE .22 MFD 50V. DIODES ARE TYPE FD777 & ALL NPN TRANSISTORS ARE DEC3009B & PNP TRANSISTORS ARE DEC4258.
2. BOND L1 TO ETCHED BOARD




| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| [illegible] | Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q15, Q17, Q19, Q21 THRU Q25, Q31 THRU Q40 Q51, Q54, Q56, Q58, Q59, Q63, Q65, Q66, Q69, Q70 | TRANSISTOR DEC [illegible] | [illegible] | 40 |
| 36 | Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16, Q18, Q20, Q26 THRU Q30, Q41 THRU Q50, Q52, Q53, Q57, Q60, Q61, Q62, Q64, Q67, Q68, Q71, Q55 | TRANSISTOR DEC 3009 B | 1503100 | 39 |
| 1 | E35 | I.C. DEC 74S140 | 1910546 | 38 |
| 8 | E2, E17, E10, E22, E24 E25, E28, E44 | I.C. DEC 74S112 | 1910545 | 37 |
| 5 | E5, E8, E19, E29, E33 | I.C. DEC 74S74 | 19105[illegible] | 36 |
| 4 | E11, E12, [illegible] | I.C. DEC 74S65 | [illegible]10543 | 35 |
| 1 | E32 | I.C. DEC 74S64 | 1910542 | 34 |
| 6 | E1, E9, E14, E16, E37, E41 | I.C. DEC 74S40 | 1910541 | 33 |
| 2 | E40, [illegible]46 | I.C. DEC 74S20 | 1910539 | 32 |
| 3 | E3, [illegible], E47 | I.C. DEC 74S11 | 1910537 | 31 |
| 5 | E4, [illegible], E21, E30, E45 | I.C. DEC 74S04 | 1910534 | 30 |
| 4 | E10, E31, E36, E42 | I.C. DEC 74S00 | 1910532 | 29 |
| 1 | R162 | POT 1K 3/4W 10% | 1309143-07 | 28 |
| 9 | R117, R130, R151, R140, R147, R150, R157, R163, R166 | RES. 680 1/4W 5% | 1301424 | 27 |
| 1 | R142 | RES. 750 1/4W 5% | 1301401 | 26 |
| 13 | R66, R68, R70, R72, R74, R76, R78, R80, [illegible] R118, R119, R[illegible] | RES. 1.2K 1/4W 5% | 1301320 | 25 |
| 26 | R13, R15, R18, R[illegible] R28, R30, R3[illegible] R41, R44, R47, [illegible], R53, R56, R59, R62, [illegible], R104, R114, R115, R13[illegible], [illegible]58 | RES. 10 1/4W 5% | 1301317 | 24 |
| 5 | R12 R17 R22 R2[illegible] R32 | RES. 15K 1/4 5% | 1300496 | 23 |
| 22 | R1 THRU R10 R40 R46 R52 R58 R64 R67 R69 R71 R73 R75 R99 R113 | RES. 4.7K 1/4 5% | 1300447 | 22 |
| 7 | R77, R79, R81, R83, R85, R86, R103 | RES. 3K 1/4 5% | 1300432 | 21 |
| 6 | R11, R16, R21, R26, R31, R143 | RES. 1.5K 1/4 5% | 1300391 | 20 |
| 75 | R36, R37, R42, R43, R48, R49, R54, R55, R60, R61, R89 THRU R95, R105 THRU R111 R122, R123, R124, R126, R101, R138, R139, R148 R153, R167 THRU R208 | RES 1K 1/4 5% | 1300368 | 19 |
| 12 | R116 R129, R141, R146, R149, R156, R152, R159, R160, R161, R164, R165 | RES. 330 1/4W 5% | 1300295 | 18 |
| 1 | R145. | RES. 220 1/4W 5% | 1300271 | 17 |
| 6 | R100, R125, R127, R131, R154, R155 | RES. 150 1/4W 5% | 1300250 | 16 |
| 11 | R14 R19 R24 R29 R34 R39 R45 R51 R57 R63 R121 | RES. 100 1/4W 5% | 1300229 | 15 |
| 2 | R133, R137 | RES. 68 1/4W 5% | 1300219 | 14 |
| 7 | R87, R88, R97 R134, R135, R144, R98 | RES. 47 1/4W 5% | 1300202 | 13 |
| 54 | D1, D3, D4, D6, D7, D9, D10, D12, D13, D15, D16, D18, D19, D21, D22, D24, D25, D27 D28, D30, D31 THRU D54 D57, D58, D61, D62, D64, D67, D68, D69, D65, D70 | DIODE FD777 | 1103041 | 12 |
| 39 | D2, D5, D8, D11, D14, D17, D20, D23, D26, D29, D55, D56, D59, D60, D63, D66, D71 THRU D93 | DIODE D662 | 1100113 | 11 |
| 96 | C46 THRU C97, C99, C100, C140 C102, C103 C105, C106, C108 C109, C111, C112, C114, C115 C117, C118, C120, C121, C123 C124, C126, C127 THRU C145 C147, C148, C149, C151, C152 | CAP .22 µf 50V MONO. | 1010274-1 | 10 |
| 8 | C41 THRU C45, C146, C158, C159 | CAP 6.8 µf 35V 10% S.TANT | 1005306 | 9 |
| 42 | C1 THRU C39, C150 C155, C156, | CAP. .01µf 100V 20% DISC | 1001610 | 8 |
| 1 | C154 | CAP. 100 PF 100V 5% D.M. | 1000016 | 7 |
| 1 | C157 | CAP 47 PF 100V 5% D.M. | 1000011 | 6 |
| 10 | C98, C101, C104, C107, C110, C113, C116, C119, C122, C125 | CAP. 33 PF 100V 5% DM. | 1000009 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009799 | 4 |
| REF | | MODULE ECO HISTORY | B-MH-M8109-0-6 | 3 |
| REF | | ASSY/DRILL HOLE LAYOUT | D-AH-M8109-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8109-0-4 | 1 |

PARTS LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 2 | R209, R210 | POT. 2K 1/2 W | 13-09150-07 | 51 |
| 1 | R211 | POT. 100 1/2 W | 13-09150-05 | 50 |
| 1 | R136 | RES. 120 1/4 W 5% | 13-00247 | 49 |
| 3 | E6, E26 E27 | IC DEC 74S74-45 | 1910950 | 48 |
| 2 | W3, W5 | JUMPER INSULATED | 9009185 | 47 |
| 8 | | EYELET #GS4-7 | 9006732 | 46 |
| 4 | | HANDLE FLIP-CHIP MAGENTA | 9008337-06 | 45 |
| 1 | Y1 | CRYSTAL 33.333 MHZ | 1810694-1 | 44 |
| 1 | L2 | INDUCTOR .47 µh NYTRONICS WEE-WEE -0.47 | 1610999 | 43 |
| 1 | L1 | INDUCTOR .22 µh VARIABLE NYTRONICS WEE VL .22 | 1611000 | 42 |
| 1 | L3 | INDUCTOR RFCS 33 µh | 1601759 | 41 |

PARTS LIST

| DEC NO. | EIA NO. |
|---|---|
| DEC 4258 | NONE |
| DEC 3009B | 2N3646 |
| DEC FD777 | 1103041 |
| DEC 662 | 1N645 |

SEMICONDUCTOR CONVERSION CHART

| IC TYPE | GND | +5V |
|---|---|---|
| DEC 74S112 | 8 | 16 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|
| | | | |

JUMPER LIST

| REV | CHANGE NO. |
|---|---|
| R | M8109-00015 |
| P | M8109-000014 |
| N | M8109-000011 |
| M | M8109-[illegible] |
| L | M8109-00009 |
| K | M8109-[illegible] |
| J | [illegible] |
| H | [illegible] |
| E | M8109-00004 |
| E | M8109-00003 |
| D | M8109-00002 |
| C | M8109-00001 |
| B | ORIGINATED |

REVISIONS

ETCH BOARD REV F

NEXT HIGHER ASSY B-DD-KB11-0

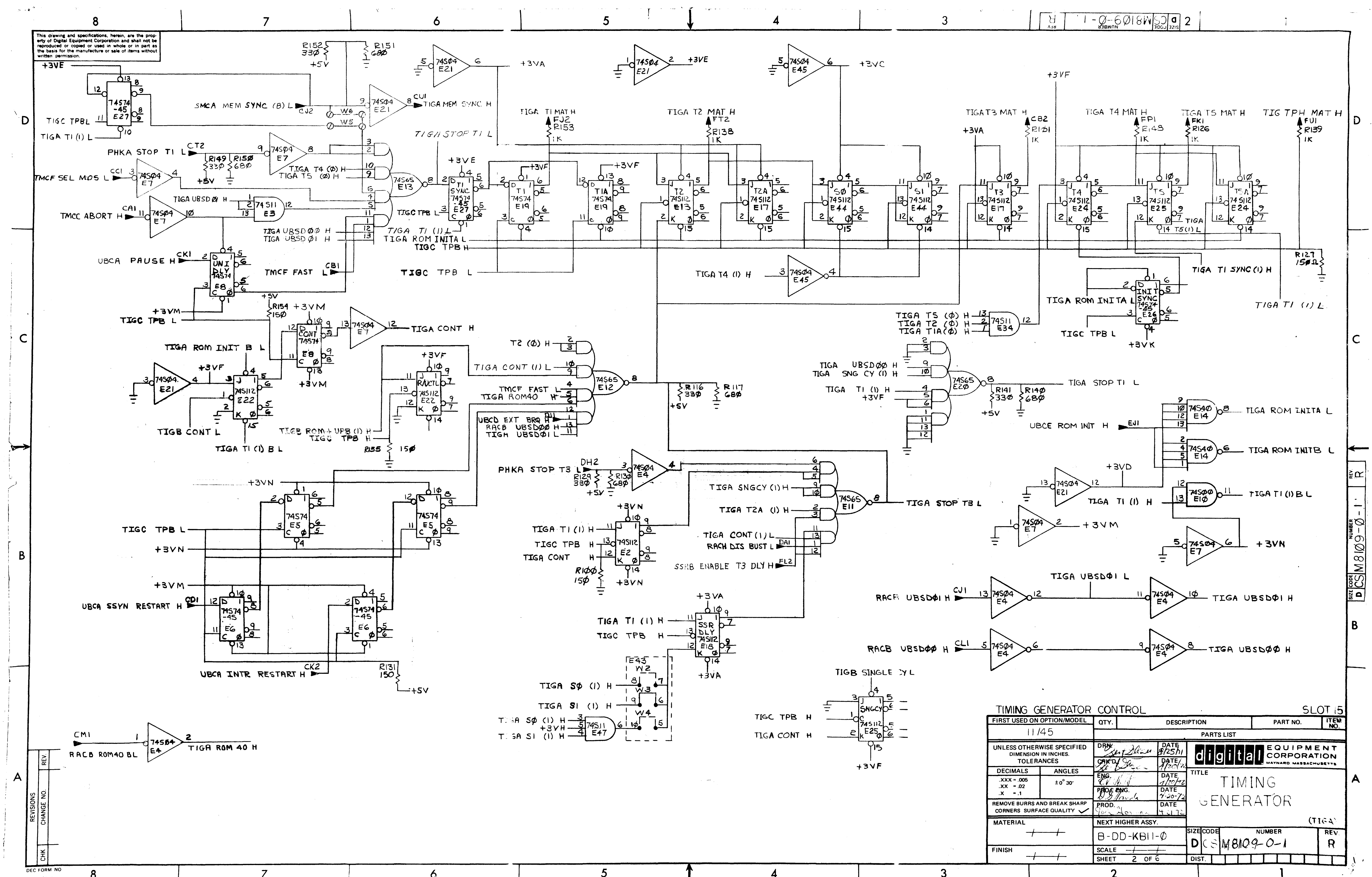
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
# TIMING GENERATOR

SIZE E CODE CS NUMBER M8109-0-1 REV. R

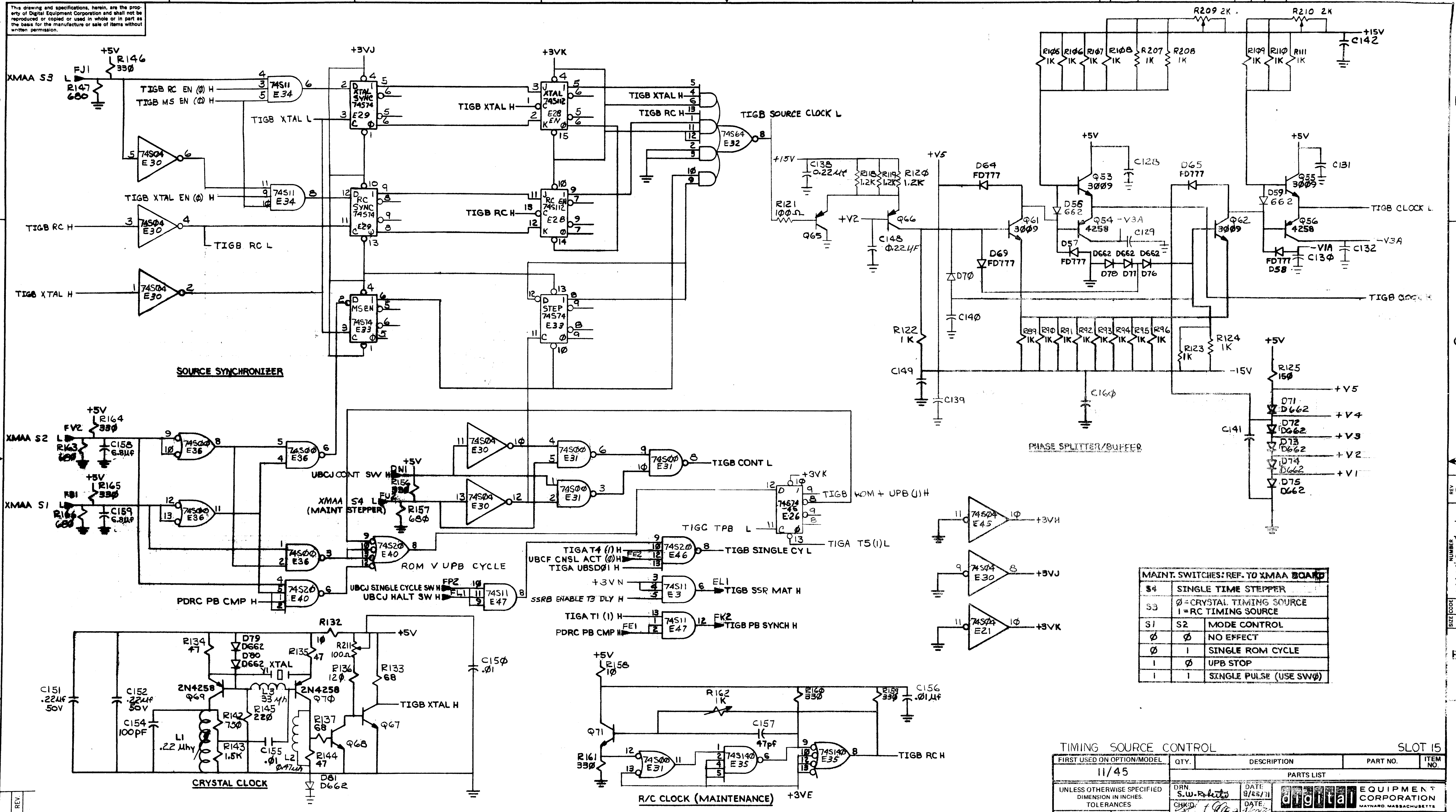
SCALE 2/1 SHEET 1 OF 6

DEC FORM NO. DRE 104



This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
SMCA MEM SYNC (B) L
TIGA MEM SYNC H
TIGC TPBL
TIGA T1 (1) L
PHKA STOP T1 L
TMCF SEL MOS L
TMCC ABORT H
UBCA PAUSE H
TMCF FAST L
TIGC TPB L
TIGA CONT H
TIGA ROM INIT B L
TIGB CONT L
TIGA T1 (1) B L
TIGA T1 MAT H
TIGA T2 MAT H
TIGA T3 MAT H
TIGA T4 MAT H
TIGA T5 MAT H
TIG TPH MAT H
TIGA T1 SYNC (1) H
TIGA ROM INITA L
TIGA T1 (1) L
TIGA STOP T1 L
TIGA ROM INITB L
TIGA STOP T3 L
PHKA STOP T3 L
TIGA SNGCY (1) H
TIGA T2A (1) H
TIGA CONT (1) L
RACH DIS BUST L
SSRB ENABLE T3 DLY H
UBCE ROM INIT H
TIGA T1 (1) H
TIGA T1 (1) B L
RACB UBSD01 H
TIGA UBSD01 L
TIGA UBSD01 H
RACB UBSD00 H
TIGA UBSD00 H
UBCA SSYN RESTART H
UBCA INTR RESTART H
RACB ROM40 BL
TIGA ROM 40 H
TIGA S0 (1) H
TIGA S1 (1) H
TIGB SINGLE CYL
TIGC TPB H
TIGA CONT H
TIMING GENERATOR CONTROL
SLOT 15
FIRST USED ON OPTION/MODEL
11/45
QTY.
DESCRIPTION
PART NO.
ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS
ANGLES
.XXX = .005
.XX = .02
.X = .1
±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
DRN.
CHK'D.
ENG.
PROJ. ENG.
PROD.
DATE
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE
TIMING GENERATOR
(TIGA)
NEXT HIGHER ASSY.
B-DD-KB11-0
SIZE D
CODE CS
NUMBER M8109-0-1
REV. R
SCALE
SHEET 2 OF 6
DIST.
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| MAINT. SWITCHES: REF. TO XMAA BOARD | | |
|---|---|---|
| S4 | SINGLE TIME STEPPER | |
| S3 | Ø = CRYSTAL TIMING SOURCE<br>1 = RC TIMING SOURCE | |
| S1 | S2 | MODE CONTROL |
| Ø | Ø | NO EFFECT |
| Ø | 1 | SINGLE ROM CYCLE |
| 1 | Ø | UPB STOP |
| 1 | 1 | SINGLE PULSE (USE SWØ) |

TIMING SOURCE CONTROL — SLOT 15

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. S.W. Roberts — DATE 9/26/71
CHK'D — DATE 4/20/72
ENG. — DATE 4/20/72
PROJ. ENG. — DATE 4-20-72
PROD. — DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —//— SHEET 3 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

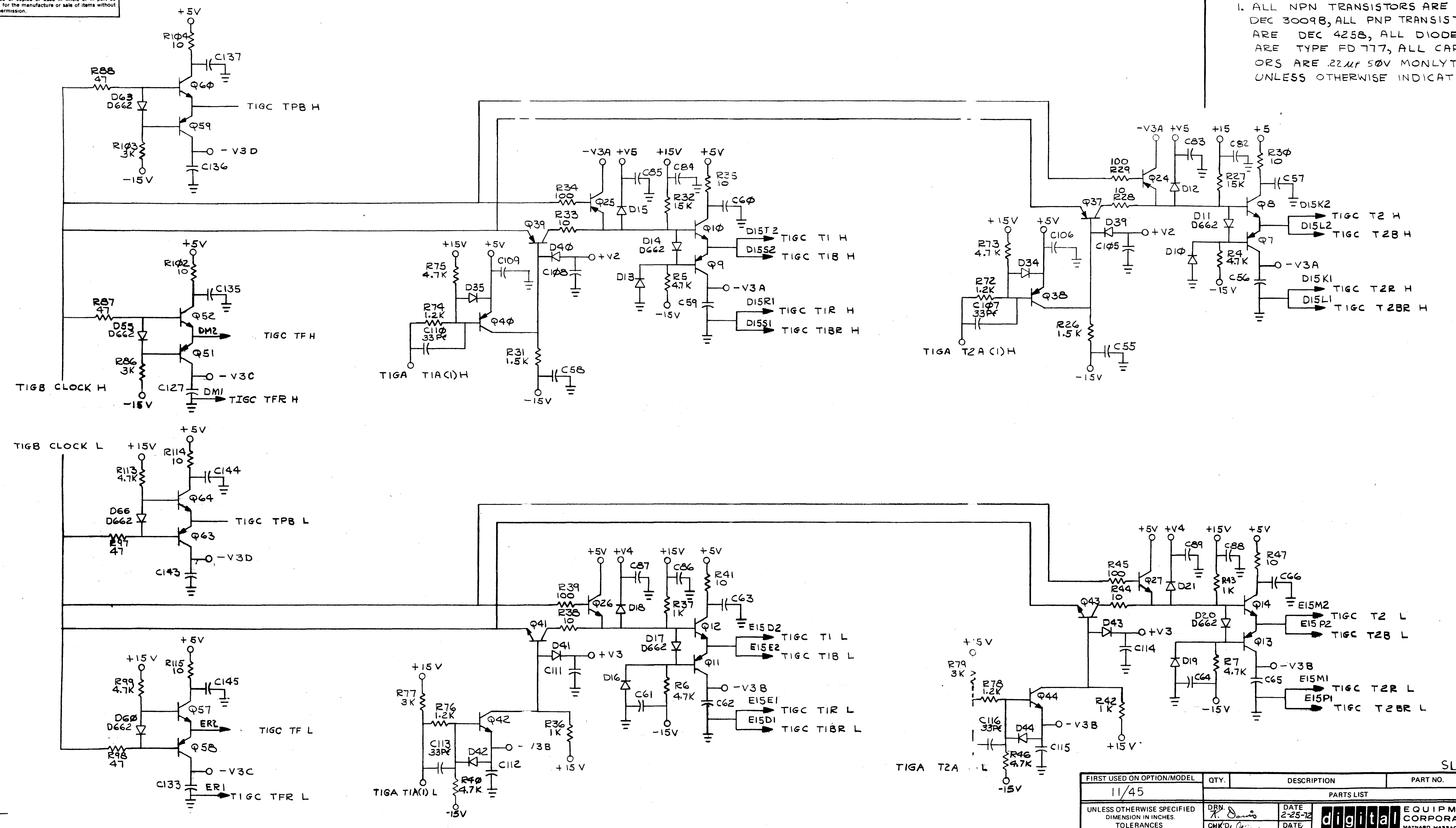
TITLE: TIMING GENERATOR (TIGB)

SIZE D — CODE CS — NUMBER M8109-Ø-1 — REV R

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

NOTES:
1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258, ALL DIODES ARE TYPE FD 777, ALL CAPACITORS ARE .22µf 50V MONLYTHIC UNLESS OTHERWISE INDICATED.




SLOT 15

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | PARTS LIST | | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX ± .005 .XX ± .02 .X ± .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH —/—

DRN. R. Davis DATE 2-25-72
CHK'D. DATE
ENG. DATE 4/12/72
PROJ. ENG. DATE 4-20-72
PROD. DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —/— SHEET 4 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
TIMING GENERATOR (TIGC)

SIZE D CODE CS NUMBER M8109-Ø-1 REV. R

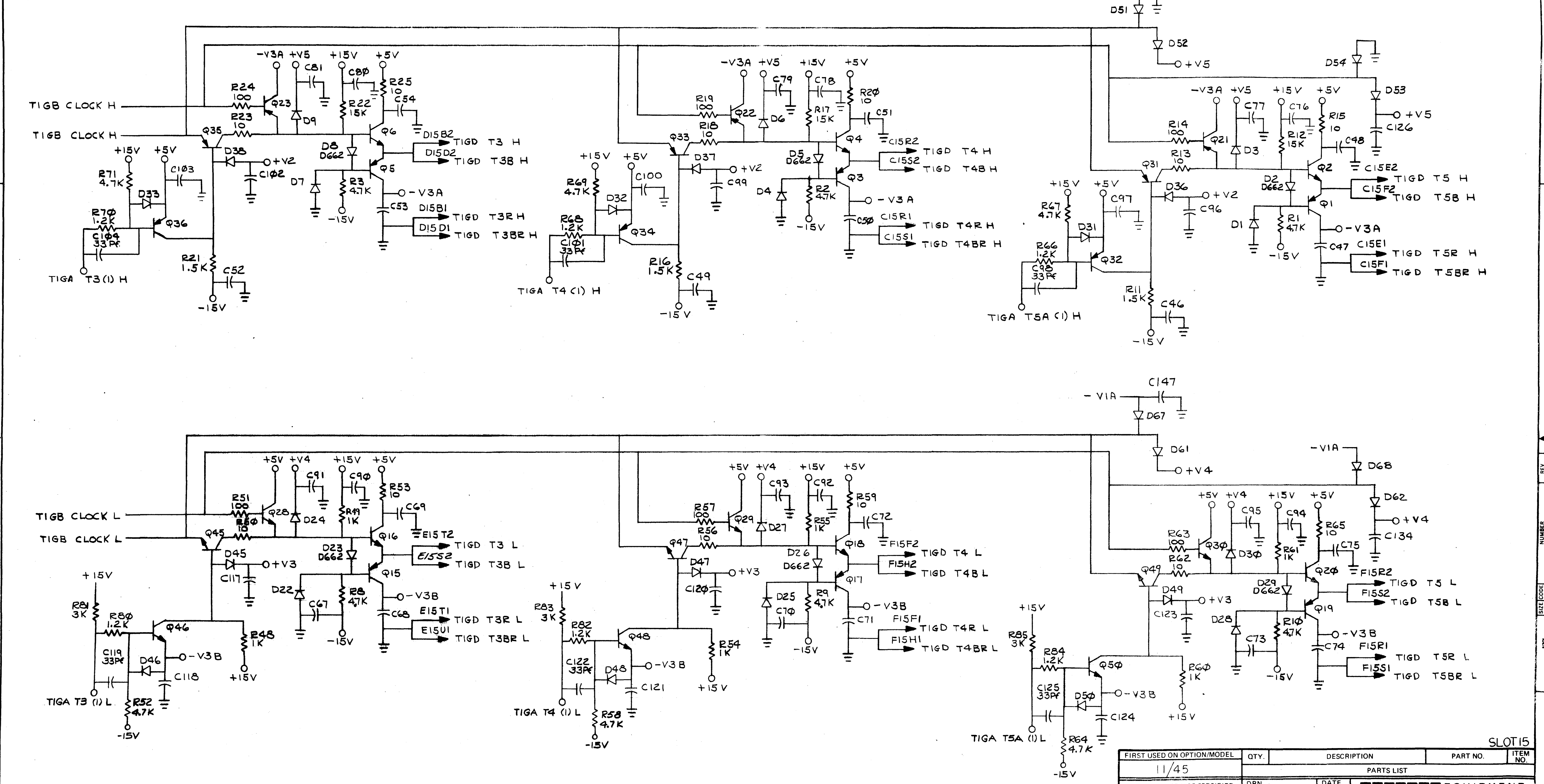
DIST.

REVISIONS — REV. / CHANGE NO / CHK

BRUNING 40-522 15840

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE:
1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258. ALL DIODES ARE TYPE FD777 ALL CAPACITORS ARE .22 µF MONLYTHIC UNLESS OTHERWISE INDICATED.

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —
FINISH —

DRN. DATE 3-1-72
CHK'D. DATE 4/20/72
ENG. DATE 4/20/72
PROJ. ENG. DATE 4-20-72
PROD. DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —
SHEET 5 OF 6

**digital** EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

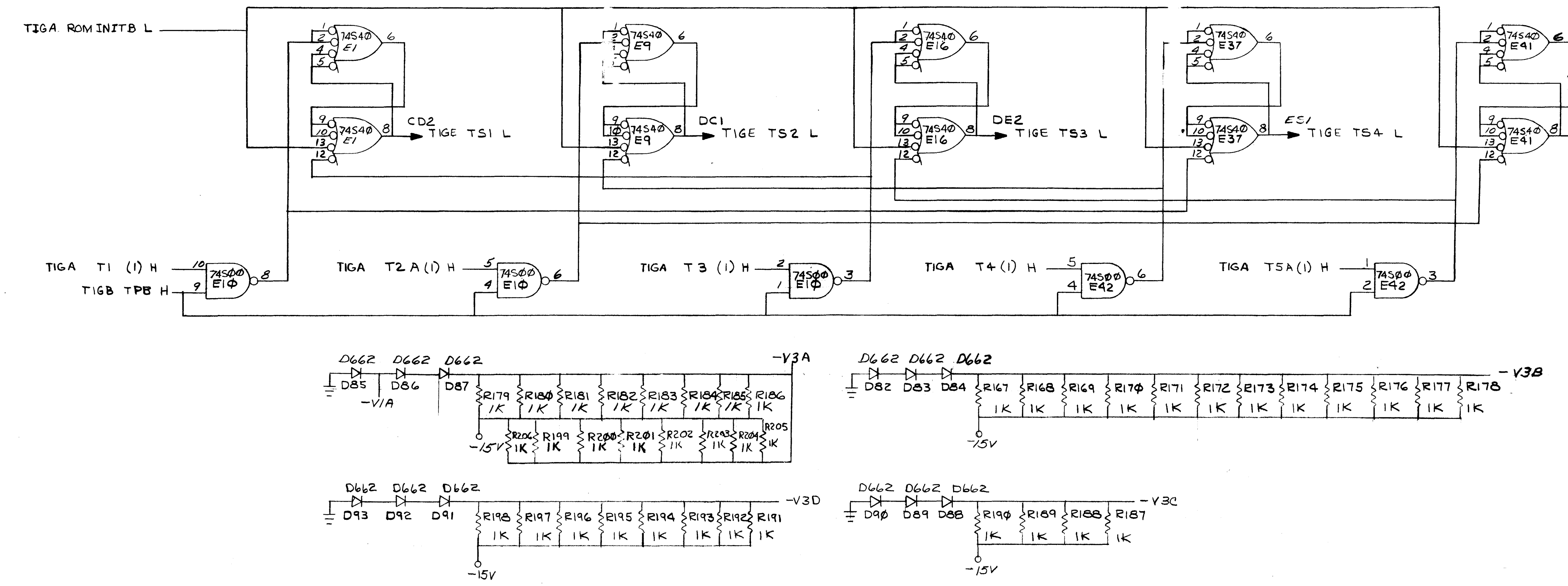
TITLE
# TIMING GENERATOR
(TIGD)

| SIZE | CODE | NUMBER | REV |
|---|---|---|---|
| D | CS | M8109-Ø-1 | R |

DIST.

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




TIMING STATE DRIVERS

SLOT 15

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

DRN. DATE 8-25-71
CHK'D. DATE 4/20/72
ENG. DATE 4/20/72
PROJ. ENG. DATE 4-20-72
PROD. DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —//—

SHEET 6 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE TIMING GENERATOR (TIGE)

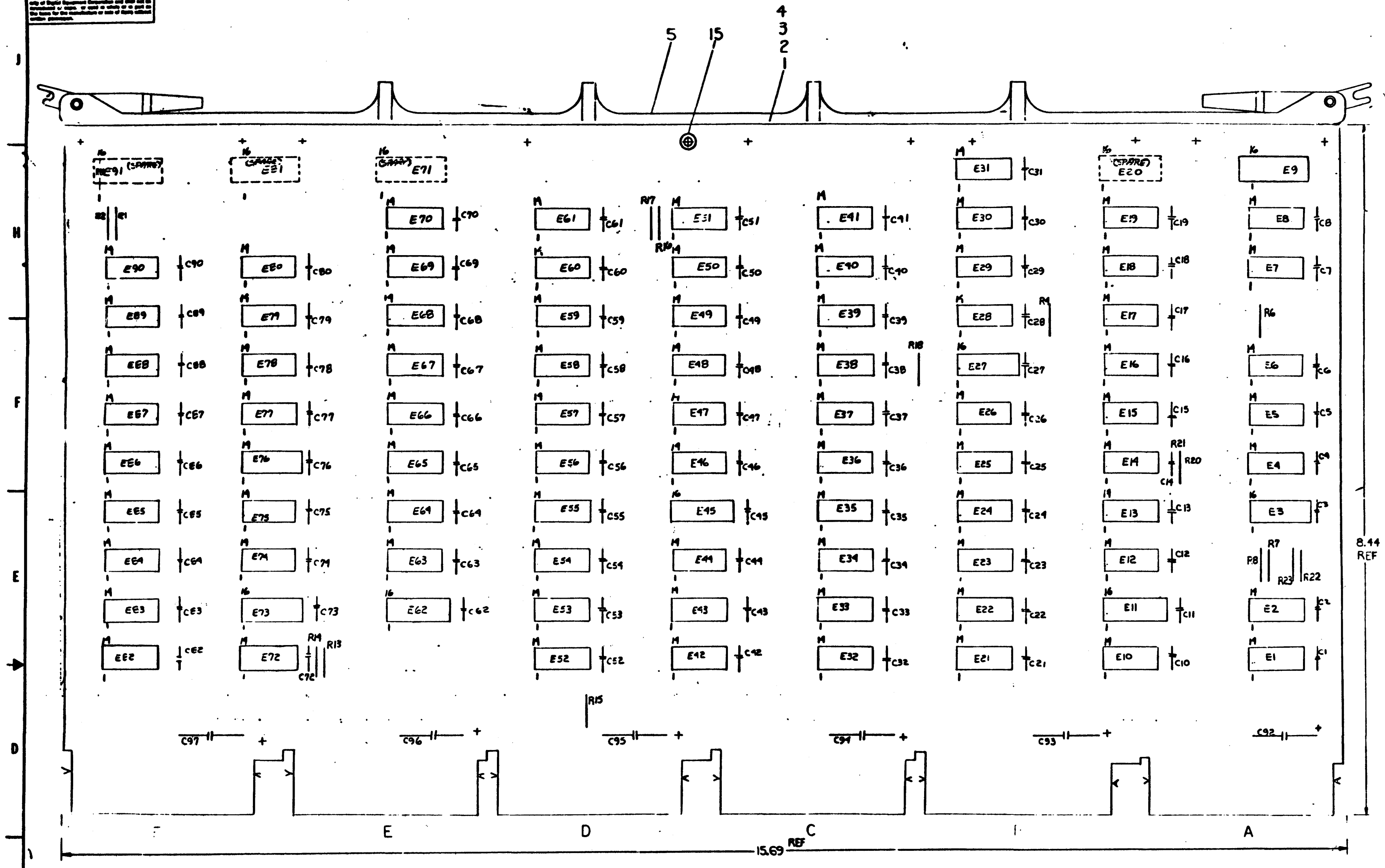
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M81Ø9-Ø-1 | R |

DIST.

REVISIONS | REV | CHANGE NO. | CHK

DEC FORM NO DRD 102-B

NOTE:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω, CAPACITANCE IS IN PICOFARADS, CAPS WITHOUT VALUE NOTED ARE .01 MFD.




AA2,AV1,BA2,BV1,CA2,CV1,
DA2,DV1,EA2,EV1,FA2,FV1 +5V

AC2,AN2,AH1,AT1,BC2,BN2,
BH1,BT1,CC2,CN2,CH1,CT1,
DC2,DN2,DH1,DT1,EC2,EN2,
EH1,ET1,FC2,FN2,FH1,FT1 GND

6.8 μF C92 THRU C97

.01 μF C1-C8,C10-C19,C21-C70, C72-C80,C82-C90

| QTY | REF DESIGNATION | DESCRIPTION | PART NO | ITEM NO |
|---|---|---|---|---|
| 1 | R24 | RESISTOR 10K, 1/4W, 5% | 1300479 | 34 |
| 1 | E3 | DEC IC 74155 | 1910656 | 33 |
| 2 | E24,E59 | DEC IC 8885 | 1910649 | 32 |
| 3 | E45,E62,E73 | DEC IC 74S174 | 1910550 | 31 |
| 1 | E11 | DEC IC 74S153 | 1910547 | 30 |
| 3 | E38,E56,E86 | DEC IC 74S140 | 1910546 | 29 |
| 1 | E27 | DEC IC 74S112 | 1910545 | 28 |
| 5 | E17,E40,E41,E54,E37 | DEC IC 74S74 | 1910544 | 27 |
| 3 | E16,E25,E28 | DEC IC 74S64 | 1910542 | 26 |
| 11 | E8,E30,E39,E48,E50,E53, E64,E65,E70,E75,E89 | DEC IC 74S20 | 1910539 | 25 |
| 17 | E5,E14,E21,E29,E31,E34,E35, E42,E47,E49,E66,E67,E72, E76,E77,E78,E88 | DEC IC 74S11 | 1910537 | 24 |
| 5 | E19,E32,E44,E51,E83 | DEC IC 74S10 | 1910536 | 23 |
| 12 | E4,E18,E22,E26,E33,E36, E46,E57,E63,E74,E85,E90 | DEC IC 74S04 | 1910534 | 22 |
| 8 | E1,E6,E23,E43,E60,E79,E87,E9 | DEC IC 74S00 | 1910532 | 21 |
| 1 | E2 | DEC IC 8815A | 1909713 | 20 |
| 1 | E10 | DEC IC 380A | 1909485 | 19 |
| 1 | E7 | DEC IC 74H11 | 1909267 | 18 |
| 5 | E15,E52,E58,E61,E84 | DEC IC 74H50 | 1909060 | 17 |
| 7 | E12,E13,E55,E68,E69,E81,E82 | DEC IC 74H30 | 1909059 | 16 |
| 12 | | EYELET | 9006732 | 15 |
| 2 | R2,R14 | RESISTOR, 680Ω, 1/4W, 5% | 1301424 | 14 |
| 1 | R7 | RESISTOR, 180Ω, 1/4W, 5% | 1301322 | 13 |
| 3 | R15 THRU R17 | RESISTOR, 1K, 1/4W, 5% | 1300365 | 12 |
| 1 | R8 | RESISTOR, 390Ω, 1/4W, 5% | 1300309 | 11 |
| 2 | R1,R13 | RESISTOR, 330Ω, 1/4W, 5% | 1300295 | 10 |
| 1 | R21 | RESISTOR, 150Ω, 1/4W, 5% | 1300250 | 9 |
| 4 | R4,R6,R18,R23 | RESISTOR, 120Ω, 1/4W, 5% | 1300247 | 8 |
| 86 | C1-C8,C10-C19,C21-C70, C72-C80,C82-C90 | CAP, .01μF, 100V, 20% DISC | 1001610 | 7 |
| 6 | C92 THRU C97 | CAP, 6.8 μF, 35V, 20% | 1000067 | 6 |
| 1 | | HANDLE, MODULE | 1210711-2-0 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009803 | 4 |
| REF | | ECO MODULE HISTORY | B-MH-M8105-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LAYOUT | E-AH-M8105-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8105-0-4 | 1 |

PARTS LIST

ETCH BOARD REV E

| IC TYPE | GND | +5V |
|---|---|---|
| DEC 74S174 | 8 | 16 |
| DEC 74155 | 8 | 16 |
| DEC 74S153 | 8 | 16 |
| DEC 74S112 | 8 | 16 |
| DEC 380A | 1 | 8 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO | AWG | FROM PT | TO PT |
|---|---|---|---|
| | | | |

JUMPER LIST

DEC NO | EIA NO | DEC NO | EIA NO

SEMICONDUCTOR CONVERSION CHART

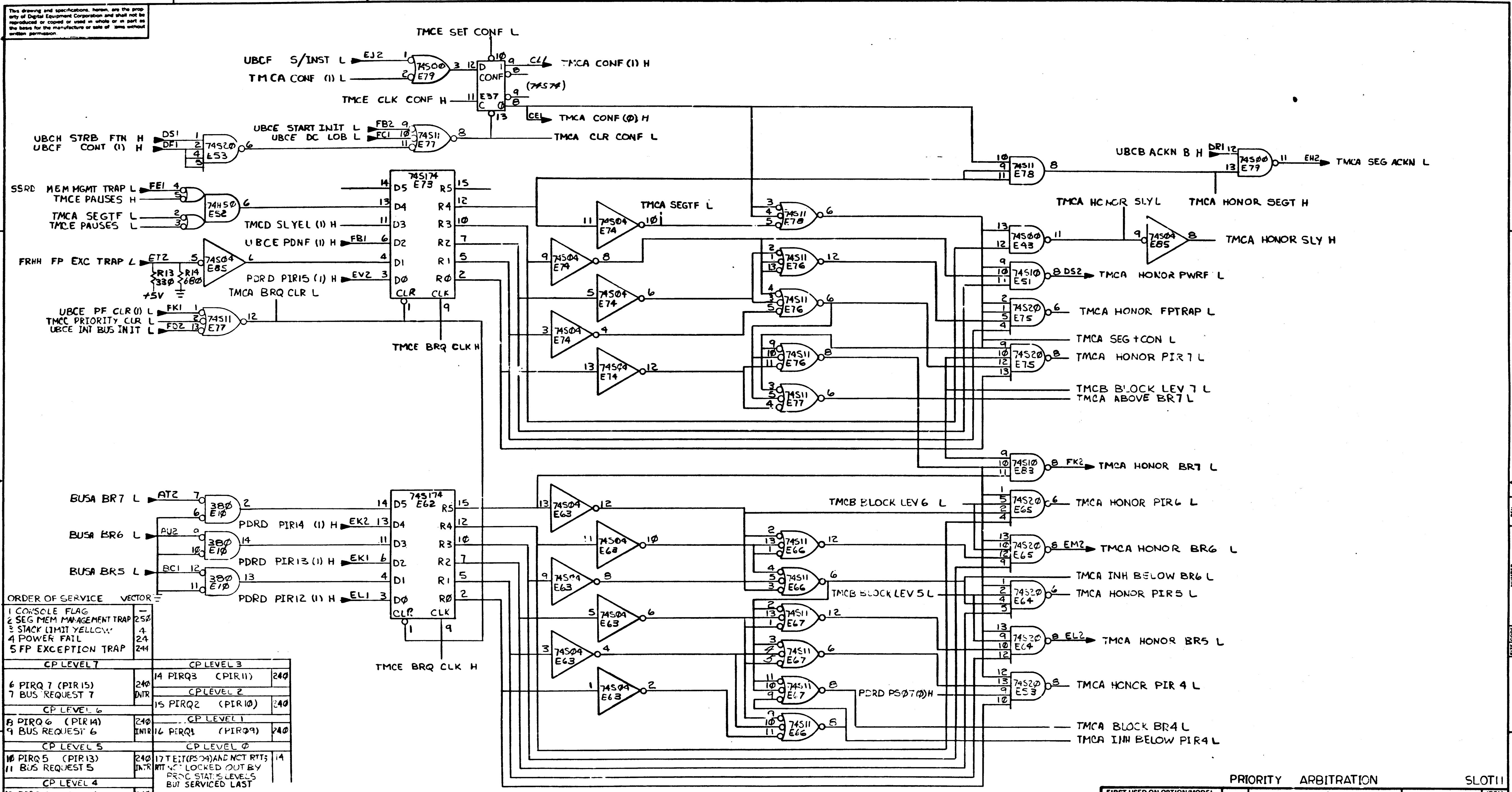
EQUIPMENT CORPORATION

TITLE: TRAP & MISC. CONTROL

NEXT HIGHER ASSY: E-IA-...145-0

SCALE 2/1

SIZE E CODE CS NUMBER M8105-0-1




| ORDER OF SERVICE | VECTOR |
|---|---|
| 1 CONSOLE FLAG | — |
| 2 SEG MEM MANAGEMENT TRAP | 250 |
| 3 STACK LIMIT YELLOW | 4 |
| 4 POWER FAIL | 24 |
| 5 FP EXCEPTION TRAP | 244 |
| CP LEVEL 7 | |
| 6 PIRQ 7 (PIR 15) | 240 |
| 7 BUS REQUEST 7 | INTR |
| CP LEVEL 6 | |
| 8 PIRQ 6 (PIR 14) | 240 |
| 9 BUS REQUEST 6 | INTR |
| CP LEVEL 5 | |
| 10 PIRQ 5 (PIR 13) | 240 |
| 11 BUS REQUEST 5 | INTR |
| CP LEVEL 4 | |
| 12 PIRQ 4 (PIR 12) | 240 |
| 13 BUS REQUEST 4 | INTR |
| CP LEVEL 3 | |
| 14 PIRQ3 (PIR11) | 240 |
| CP LEVEL 2 | |
| 15 PIRQ2 (PIR10) | 240 |
| CP LEVEL 1 | |
| 16 PIRQ1 (PIR09) | 240 |
| CP LEVEL 0 | |
| 17 T BIT (PS 04) AND NOT RTT; RTT NOT LOCKED OUT BY PROC STATUS LEVELS BUT SERVICED LAST | 14 |

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL —
FINISH —

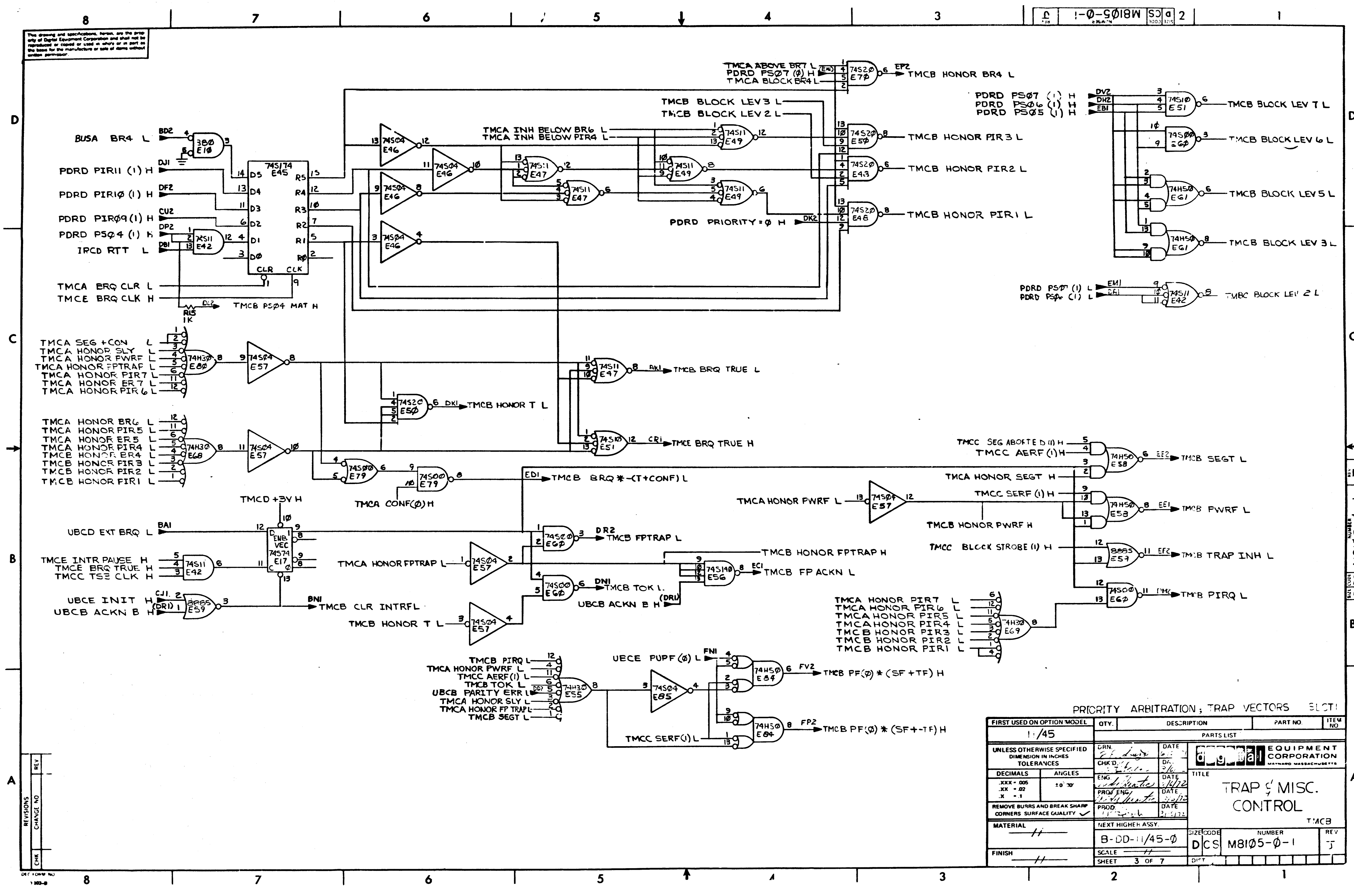
NEXT HIGHER ASSY. B-DD-11/45-0

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

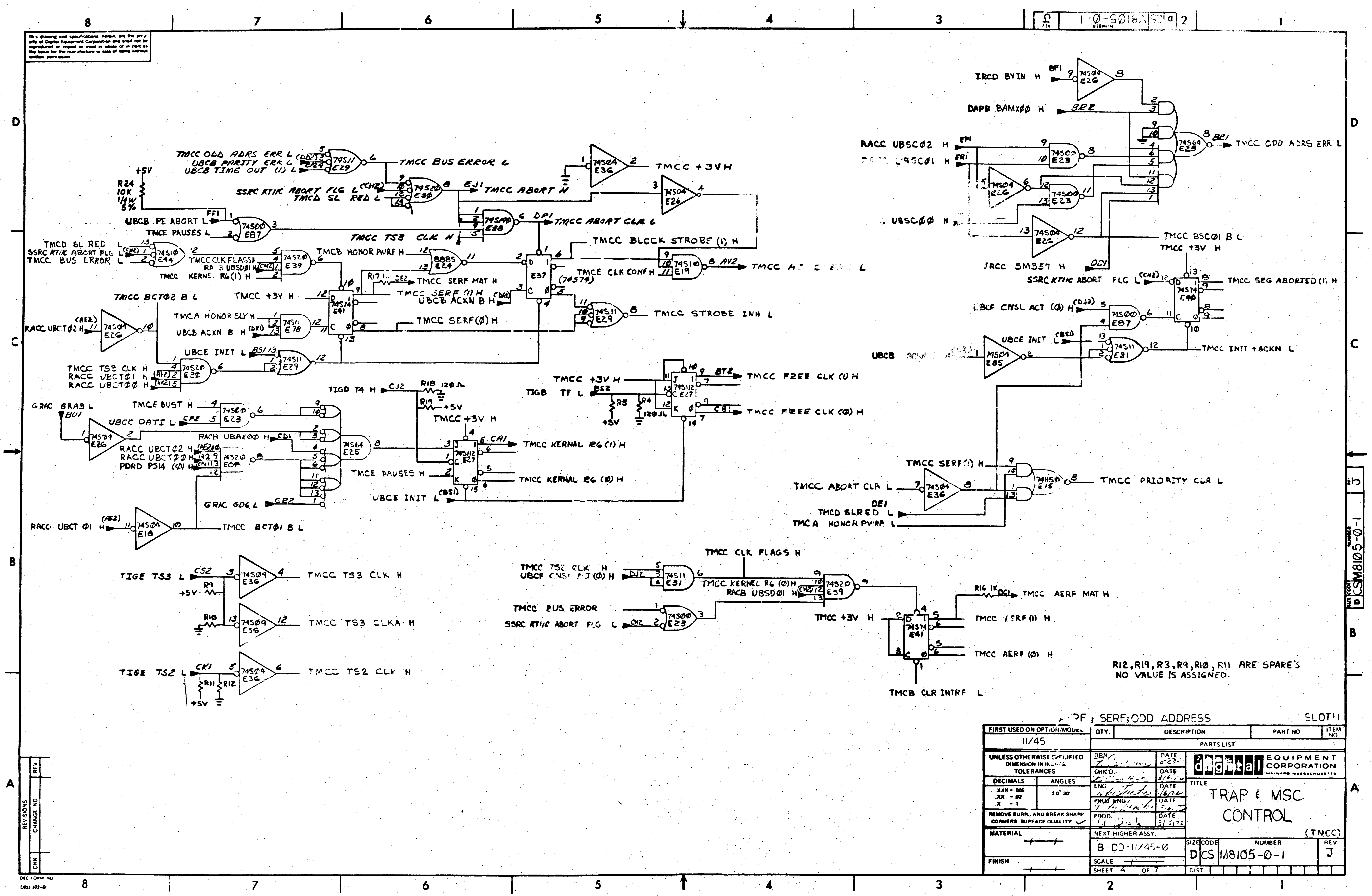
TITLE: TRAP & MISC CONTROL (TMCA)

SIZE D | CODE CS | NUMBER M8105-0-1 | REV J

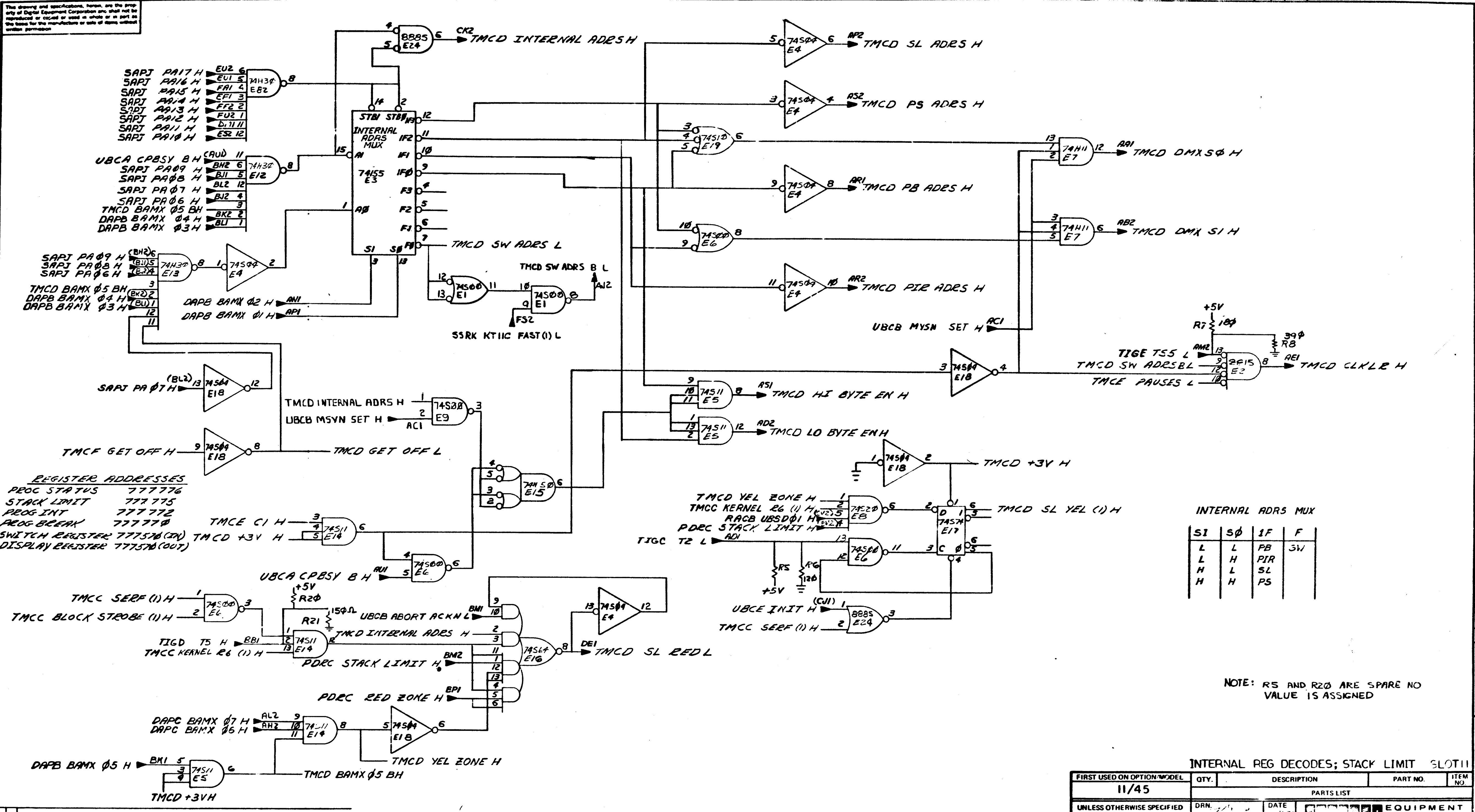
SHEET 2 OF 7



This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
BUSA BR4 L
PDRD PIR11 (1) H
PDRD PIRØ (1) H
PDRD PIRØ9 (1) H
PDRD PSØ4 (1) H
IRCD RTT L
TMCA BRQ CLR L
TMCE BRQ CLK H
TMCB PSØ4 MAT H
TMCA ABOVE BR7 L
PDRD PSØ7 (Ø) H
TMCA BLOCK BR4 L
TMCB HONOR BR4 L
TMCB BLOCK LEV3 L
TMCB BLOCK LEV2 L
TMCA INH BELOW BR6 L
TMCA INH BELOW PIR4 L
TMCB HONOR PIR3 L
TMCB HONOR PIR2 L
TMCB HONOR PIR1 L
PDRD PRIORITY=Ø H
PDRD PSØ7 (1) H
PDRD PSØ6 (1) H
PDRD PSØ5 (1) H
TMCB BLOCK LEV 7 L
TMCB BLOCK LEV 6 L
TMCB BLOCK LEV5 L
TMCB BLOCK LEV 3 L
TMBC BLOCK LEV 2 L
TMCA SEG + CON L
TMCA HONOR SLY L
TMCA HONOR PWRF L
TMCA HONOR FPTRAP L
TMCA HONOR PIR7 L
TMCA HONOR ER7 L
TMCA HONOR PIR6 L
TMCB BRQ TRUE L
TMCB HONOR T L
TMCE BRQ TRUE H
TMCA HONOR BR6 L
TMCA HONOR PIR5 L
TMCA HONOR ER5 L
TMCA HONOR PIR4 L
TMCB HONOR ER4 L
TMCB HONOR PIR3 L
TMCB HONOR PIR2 L
TMCB HONOR PIR1 L
TMCB BRQ *-(T+CONF) L
TMCA CONF(Ø) H
TMCD +3V H
UBCD EXT BRQ L
TMCE INTR PAUSE H
TMCE BRQ TRUE H
TMCC TSE CLK H
UBCE INIT H
UBCB ACKN B H
TMCB CLR INTRFL
TMCB FPTRAP L
TMCA HONOR FPTRAP L
TMCB HONOR FPTRAP H
TMCB FP ACKN L
TMCB TOK L
UBCB ACKN B H
TMCB HONOR T L
TMCC SEG ABORTED (1) H
TMCC AERF (1) H
TMCB SEGT L
TMCA HONOR SEGT H
TMCA HONOR PWRF L
TMCC SERF (1) H
TMCB PWRF L
TMCB HONOR PWRF H
TMCC BLOCK STROBE (1) H
TMCB TRAP INH L
TMCB PIRQ L
TMCA HONOR PIR7 L
TMCA HONOR PIR6 L
TMCA HONOR PIR5 L
TMCA HONOR PIR4 L
TMCB HONOR PIR3 L
TMCB HONOR PIR2 L
TMCB HONOR PIR1 L
TMCB PIRQ L
TMCA HONOR PWRF L
TMCC AERF(1) L
TMCB TOK L
UBCB PARITY ERR L
TMCA HONOR SLY L
TMCA HONOR FP TRAP L
TMCB SEGT L
UECE PUPF (Ø) L
TMCC SERF(1) L
TMCB PF(Ø) * (SF+TF) H
TMCB PF(Ø) * (SF+-TF) H
PRIORITY ARBITRATION; TRAP VECTORS SELCT
FIRST USED ON OPTION MODEL
11/45
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS
ANGLES
.XXX = .005
.XX = .02
.X = .1
±0 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
QTY.
DESCRIPTION
PART NO.
ITEM NO.
PARTS LIST
DRN.
CHK'D.
ENG.
PROJ. ENG.
PROD.
DATE
NEXT HIGHER ASSY.
B-DD-11/45-Ø
SCALE
SHEET 3 OF 7
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE
TRAP & MISC. CONTROL
TMCB
SIZE
CODE
NUMBER
REV
D CS M81Ø5-Ø-1 J
REVISIONS
CHANGE NO.
REV
CHK



TRAP & MSC CONTROL
(TMCC)
D CS M8105-0-1
REV J
SHEET 4 OF 7
FIRST USED ON OPTION/MODEL 11/45
NEXT HIGHER ASSY B-DD-11/45-0
EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS .XXX ± .005 .XX ± .02 .X ± .1
ANGLES ± 0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
QTY. DESCRIPTION PART NO ITEM NO
PARTS LIST
SERF; ODD ADDRESS
SLOT 11
R12, R19, R3, R9, R10, R11 ARE SPARE'S NO VALUE IS ASSIGNED.
TMCC ODD ADRS ERR L
UBCB PARITY ERR L
UBCB TIME OUT (1) L
TMCC BUS ERROR L
TMCC ABORT H
TMCC +3V H
TMCC ABORT CLR L
TMCC BLOCK STROBE (1) H
TMCC STROBE INH L
TMCC SERF (0) H
TMCC SERF MAT H
TMCB HONOR PWRF H
TMCC BCT02 B L
TMCC BCT01 B L
TMCC FREE CLK (1) H
TMCC FREE CLK (0) H
TMCC KERNAL RG (1) H
TMCC KERNAL RG (0) H
TMCC TS3 CLK H
TMCC TS3 CLKA H
TMCC TS2 CLK H
TMCC CLK FLAGS H
TMCC AERF MAT H
TMCC AERF (0) H
TMCB CLR INTRF L
TMCC PRIORITY CLR L
TMCC SEG ABORTED (1) H
TMCC INIT + ACKN L
TMCC BSC01 B L
IRCD BYIN H
DAPB BAMX00 H
RACC UBSC02 H
TIGE TS3 L
TIGE TS2 L
TIGB TF L
TIGD T4 H
GRAC GRAB L
GRAC GD6 L
UBCE INIT L
UBCB PE ABORT L
TMCE PAUSES L




REGISTER ADDRESSES

| | |
|---|---|
| PROC STATUS | 777776 |
| STACK LIMIT | 777775 |
| PROG INT | 777772 |
| PROG BREAK | 777770 |
| SWITCH REGISTER | 777570 (IN) |
| DISPLAY REGISTER | 777570 (OUT) |

INTERNAL ADRS MUX

| S1 | SØ | 1F | F |
|---|---|---|---|
| L | L | PB | SW |
| L | H | PIR | |
| H | L | SL | |
| H | H | PS | |

NOTE: R5 AND R2Ø ARE SPARE NO VALUE IS ASSIGNED

INTERNAL REG DECODES; STACK LIMIT SLOT11

FIRST USED ON OPTION/MODEL: 11/45

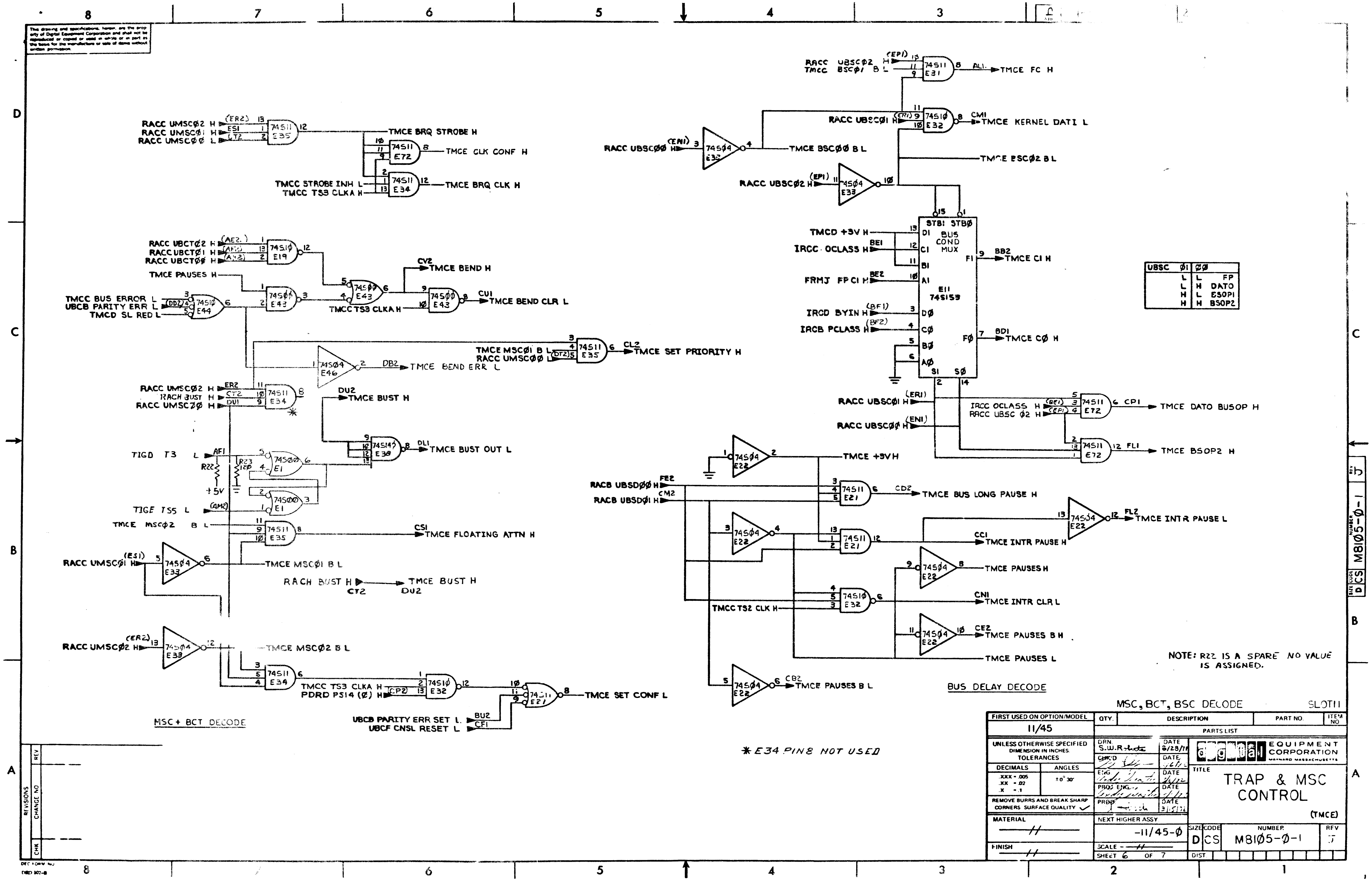
NEXT HIGHER ASSY.: B-CD-11/45-Ø

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

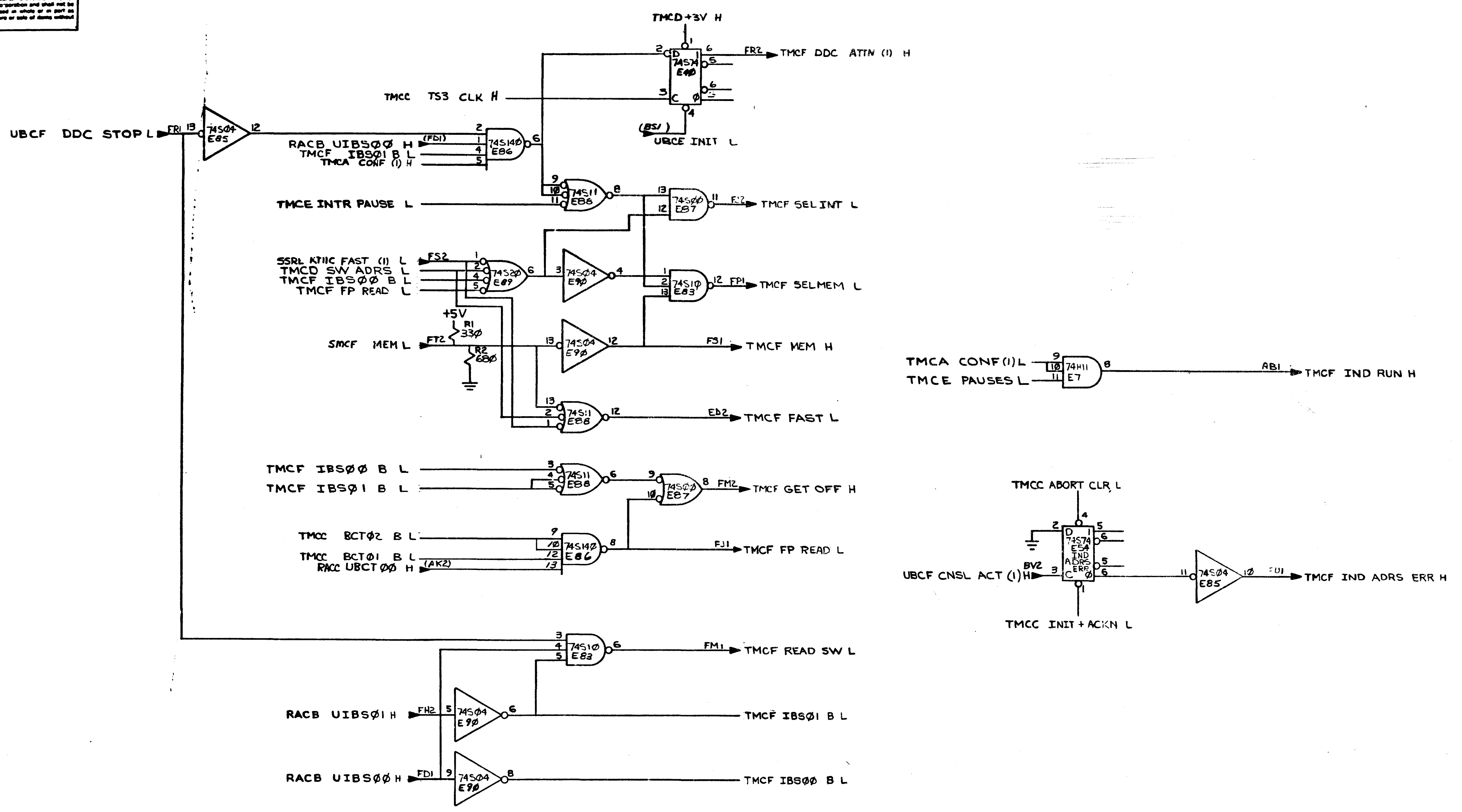
TITLE: TRAP & MSC CONTROL (TMCD)

SIZE: D CODE: CS NUMBER: M81Ø5-Ø-1 REV: —

SCALE: —/— SHEET 5 OF 7


RACC UMSCØ2 H
RACC UMSCØ1 H
RACC UMSCØØ L
74S11 E35
TMCE BRQ STROBE H
74S11 E72
TMCE CLK CONF H
TMCC STROBE INH L
TMCC TS3 CLKA H
74S11 E34
TMCE BRQ CLK H
RACC UBCTØ2 H
RACC UBCTØ1 H
RACC UBCTØØ H
74S10 E19
TMCE PAUSES H
74S00 E43
TMCE BEND H
TMCC BUS ERROR L
UBCB PARITY ERR L
TMCD SL RED L
74S10 E44
TMCC TS3 CLKA H
TMCE BEND CLR L
74S04 E46
TMCE BEND ERR L
TMCE MSCØ1 B L
RACC UMSCØØ L
TMCE SET PRIORITY H
RACH BUST H
RACC UMSCØØ H
TMCE BUST H
74S11 E34
74S11 E38
TMCE BUST OUT L
TIGD T3 L
R22
+5V
74S00 E1
TIGE TS5 L
TMCE MSCØ2 B L
TMCE FLOATING ATTN H
RACC UMSCØ1 H
74S04 E33
TMCE MSCØ1 B L
RACH BUST H
TMCE BUST H
RACC UMSCØ2 H
TMCE MSCØ2 B L
TMCC TS3 CLKA H
PDRD PS14 (Ø) H
74S10 E32
74S11 E21
TMCE SET CONF L
UBCB PARITY ERR SET L
UBCF CNSL RESET L
MSC + BCT DECODE
RACC UBSCØ2 H
TMCC BSCØ1 B L
74S11 E31
TMCE FC H
RACC UBSCØ1 H
74S10 E32
TMCE KERNEL DATI L
RACC UBSCØØ H
74S04 E33
TMCE BSCØØ B L
TMCE BSCØ2 B L
RACC UBSCØ2 H
TMCD +5V H
IRCC OCLASS H
FRMJ FP CI H
IRCD BYIN H
IRCB PCLASS H
BUS COND MUX
E11 74S153
TMCE CI H
TMCE CØ H
RACC UBSCØ1 H
RACC UBSCØØ H
IRCC OCLASS H
RACC UBSC Ø2 H
TMCE DATO BUSOP H
TMCE BSOP2 H
74S04 E22
TMCE +5V H
RACB UBSDØØ H
RACB UBSDØ1 H
TMCE BUS LONG PAUSE H
TMCE INTR PAUSE L
TMCE INTR PAUSE H
TMCE PAUSES H
TMCC TS2 CLK H
TMCE INTR CLR L
TMCE PAUSES B H
TMCE PAUSES L
TMCE PAUSES B L
BUS DELAY DECODE
UBSC Ø1 ØØ
L L FP
L H DATO
H L ESOP1
H H BSOP2
NOTE: R22 IS A SPARE NO VALUE IS ASSIGNED.
* E34 PIN8 NOT USED
MSC, BCT, BSC DECODE
SLOT11
11/45
EQUIPMENT CORPORATION
TRAP & MSC CONTROL
(TMCE)
-11/45-Ø
D CS M8105-Ø-1
SHEET 6 OF 7

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




BRMX SELECTION ; FP READ SLOT 11

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//— FINISH —//—

DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: TRAP & MSC CONTROL (TMCF)

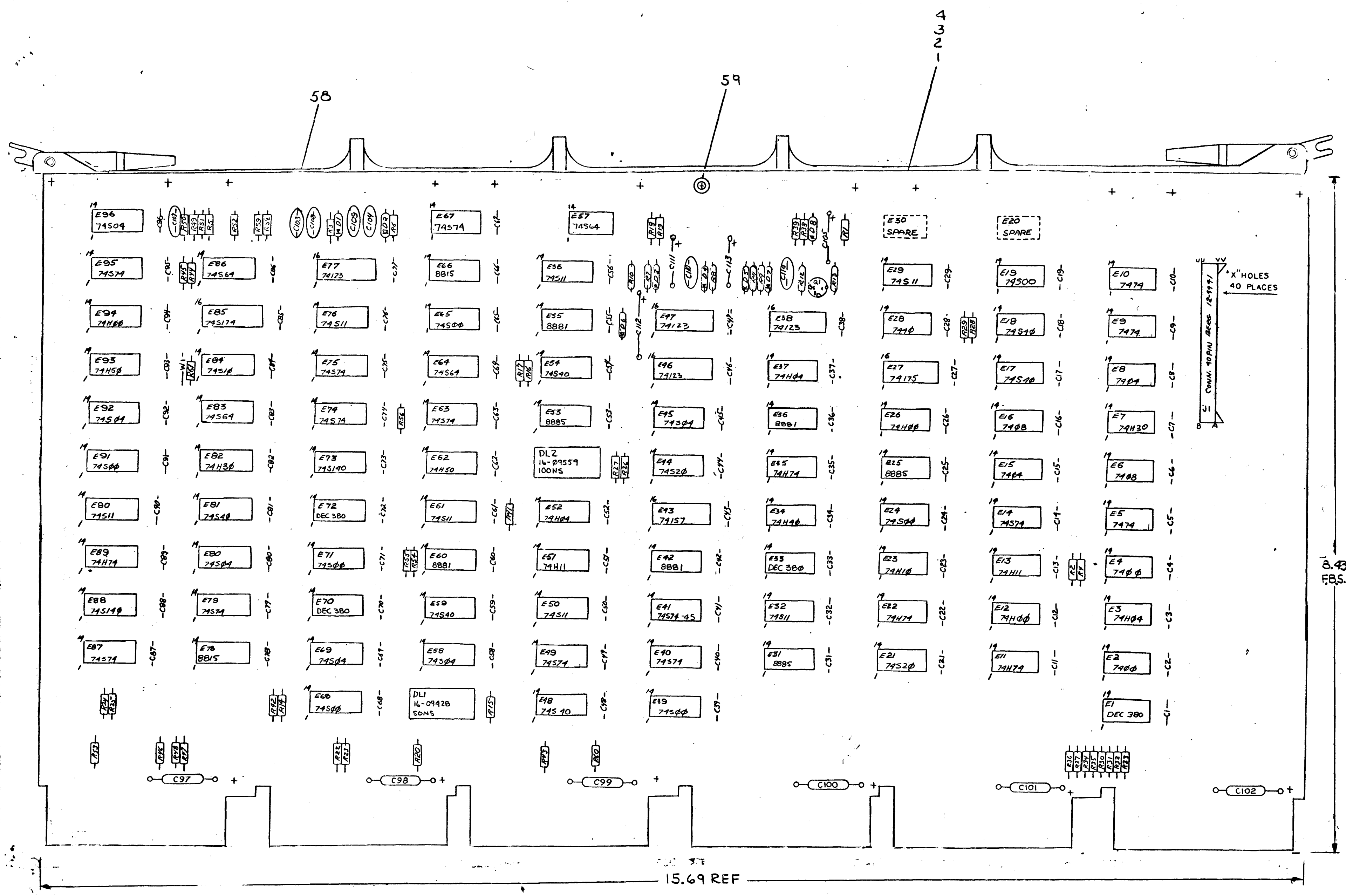
NEXT HIGHER ASSY. B-DD-11/45-0

SIZE D CODE CS NUMBER M8105-0-1 REV. J

SCALE —/— SHEET 7 OF 7

REVISIONS | REV | CHANGE NO | CHK

DEC FORM NO DRD 180-8




NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS. WITHOUT VALUE NOTED ARE .01 MFD
2. RESISTOR R19, R49, R51, R54 AND R59 ARE SPARES—NO VALUES ASSIGNED

AA2, AV1, BA2, BV1, CA2, CV1, DA2, DV1, EA2, EV1, FA2, FV2 — +5 V

AC2, AN2, AH1, AT1, BC2, BN2, BH1, BT1, CC2, CN2, CH1, CT1, DC2, DN2, DH1, DT1, EC2, EN2, EH1, ET1, FC2, FN2, FH1, FT1 — GND

+5 V / GND: + 6.8 µF C97 THRU C102, C112; .01 MFD. C1 THRU C19, C21 THRU C29, C31 THRU C56, C58 THRU C96

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| A/R | | INSULATED JUMPERS 22 AWG | 9107350 | 62 |
| A/R | W1 | 22 AWG BUSS WIRE | 9107560-01 | 61 |
| 1 | | CONN, BERG (40 PIN) | 1209941 | 60 |
| 12 | | EYELET | 9006732 | 59 |
| 1 | | HANDLE, MODULE | E-PS-1210711-2 | 58 |
| 1 | E41 | IC DEC 74S74-45 | 1910950 | 57 |
| 2 | E66, E78 | IC DEC 8815 | 1909713 | 56 |
| 3 | E25, E31, E53 | IC DEC 8885 | 1910649 | 55 |
| 4 | E36, E42, E55, E60 | IC DEC 8881 | 1909705 | 54 |
| 4 | E1, E33, E70, E72 | IC DEC 380 | 1909485 | 53 |
| 1 | E27 | IC DEC 74175 | 1910651 | 52 |
| 1 | E85 | IC DEC 74S174 | 1910550 | 51 |
| 1 | E43 | IC DEC 74157 | 1910655 | 50 |
| 2 | E73, E88 | IC DEC 74S140 | 1910546 | 49 |
| 4 | E38, E46, E47, E77 | IC DEC 74123 | 1910436 | 48 |
| 10 | E14, E40, E49, E63, E67, E74, E79, E87, E95, E75 | IC DEC 74S74 | 1910544 | 47 |
| 4 | E11, E22, E35, E89 | IC DEC 74H74 | 1909667 | 46 |
| 3 | E5, E9, E10 | IC DEC 7474 | 1905547 | 45 |
| 4 | E64, E83, E86, E57 | IC DEC 74S64 | 1910542 | 44 |
| 2 | E62, E93 | IC DEC 74H50 | 1909060 | 43 |
| 6 | E17, E18, E48, E54, E59, E81 | IC DEC 74S40 | 1910541 | 42 |
| 1 | E34 | IC DEC 74H40 | 1905586 | 41 |
| 1 | E28 | IC DEC 7440 | 1905579 | 40 |
| 2 | E7, E82 | IC DEC 74H30 | 1909059 | 39 |
| 2 | E21, E44 | IC DEC 74S20 | 1910539 | 38 |
| 7 | E29, E32, E50, E56, E61, E76, E90 | IC DEC 74S11 | 1910537 | 37 |
| 2 | E13, E51 | IC DEC 74H11 | 1909267 | 36 |
| 1 | E84 | IC DEC 74S10 | 1910536 | 35 |
| 1 | E23 | IC DEC 74H10 | 1909057 | 34 |
| 2 | E6, E16 | IC DEC 7408 | 1910155 | 33 |
| 6 | E45, E58, E69, E80, E92, E96 | IC DEC 74S04 | 1910534 | 32 |
| 3 | E3, E37, E52 | IC DEC 74H04 | 1909931 | 31 |
| 2 | E8, E15 | IC DEC 7404 | 1909686 | 30 |
| 7 | E19, E24, E39, E65 E68, E71, E91 | IC DEC 74S00 | 1910532 | 29 |
| 3 | E12, E26, E94 | IC DEC 74H00 | 1909056 | 28 |
| 2 | E2, E4 | IC DEC 7400 | 1905575 | 27 |
| 1 | DL2 | DELAY LINE 100NS | 1609559 | 26 |
| 1 | DL1 | DELAY LINE 50 NS | 1609428 | 25 |
| 1 | Q1 | TRANSISTOR DEC 3009B | 1503100 | 24 |
| 1 | R10 | RESISTOR 30K, 1/4W, 5% | 1302394 | 23 |
| 2 | R7, R11 | RESISTOR 20K, 1/4W, 5% | 1302391 | 22 |
| 5 | R1, R3, R6, R8, R9 | RESISTOR 15K, 1/4W, 5% | 1300496 | 21 |
| 1 | R12 | RESISTOR 3.9K, 1/4W, 5% | 1300444 | 20 |
| 9 | R5, R13, R26, R27, R61 R42, R43, R46, R53 | RESISTOR 1K, 1/4W, 5% | 1300365 | 19 |
| 4 | R4, R23, R25, R39 | RESISTOR 680Ω, 1/4W, 5% | 1301424 | 18 |
| 8 | R17, R28, R31, R33, R35, R37, R45, R48 | RESISTOR 390Ω, 1/4W, 5% | 1300309 | 17 |
| 4 | R2, R22, R24, R38 | RESISTOR 330Ω, 1/4W, 5% | 1300295 | 16 |
| 8 | R16, R29, R30, R32, R34, R36, R44, R47 | RESISTOR 180Ω, 1/4W, 5% | 1301322 | 15 |
| 8 | R15, R41, R52, R55, R56, R58, R60, R20 | RESISTOR 150Ω, 1/4W, 5% | 1300250 | 14 |
| 1 | R50 | RESISTOR 120Ω, 1/4W, 5% | 1300247 | 13 |
| 2 | R14, R18 | RESISTOR 100Ω, 1/4W, 5% | 1300229 | 12 |
| 8 | D1 THRU D8 | DIODE D664 | 1100114 | 11 |
| 2 | C111, C113 | CAPACITOR .47µF, 35V, 10% | 1005965 | 10 |
| 3 | C107, C110, C114 | CAPACITOR 330PF, 100V, 5% | 1000023 | 9 |
| 1 | C105 | CAPACITOR 2.2µF, 20V, 10% | 1002627 | 8 |
| 4 | C103, C104, C108, C109 | CAPACITOR 1200PF, 100V, 5% | 1002424 | 7 |
| 7 | C97 THRU C102, C112 | CAPACITOR 6.8µF, 35V, 20% | 1000067 | 6 |
| 93 | C1 THRU C19, C21 THRU C29, C31 THRU C56, C58 THRU C96 | CAPACITOR .01µF, 100V, 20% DISC | 1001610 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009802 | 4 |
| REF | | MODULE ECO HISTORY | B-MH-M8106-0-6 | 3 |
| REF | | ASSY/DRILLING HOLE LOCATION | E-AH-M8106-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8106-0-4 | 1 |

PARTS LIST

ETCH BOARD REV F

| IC TYPE | GND | +5V |
|---|---|---|
| DEC 74175 | 8 | 16 |
| DEC 74157 | 8 | 16 |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

| DEC NO | EIA NO | DEC NO. | EIA NO. |
|---|---|---|---|
| DEC 3009 B | 1503100 | | |
| DEC D664 | 1100114 | | |

SEMICONDUCTOR CONVERSION CHART

REVISIONS — REV / CHANGE NO. / CHK: B — M8106-00001 ORIGINATED — A. VEROSTIC 4-12-72

DRN. DATE 3-15-72
CHK'D. DATE
ENG. DATE 3-72
PROJ. ENG DATE 3-72
PROD. DATE 3-5-72
NEXT HIGHER ASSY B-DD-KB11-0
SCALE 2/1
SHEET 1 OF 14

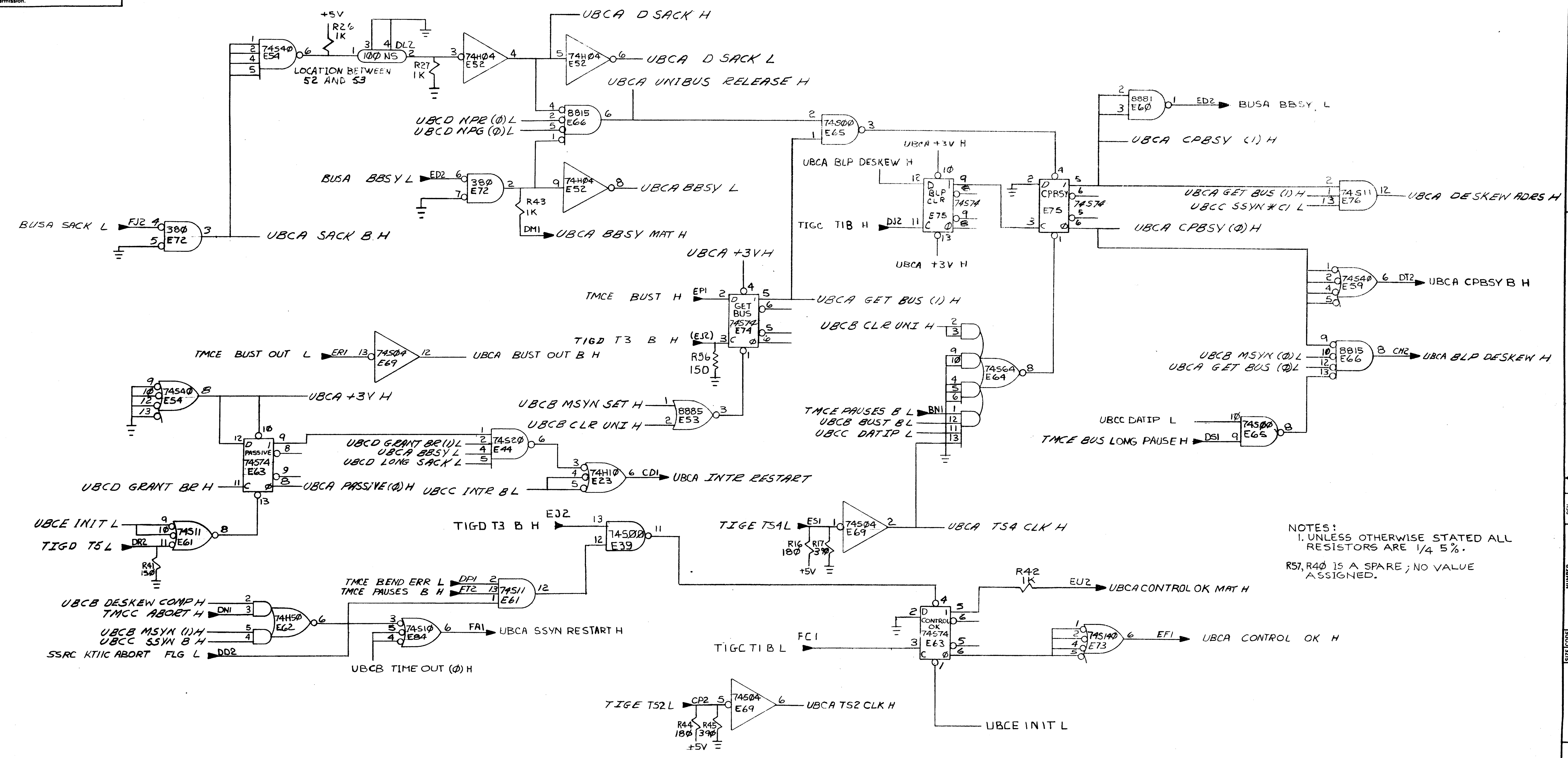
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL

SIZE E CODE CS NUMBER M8106-0-1 REV. N

DEC FORM NO. DRE 104

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTES:
1. UNLESS OTHERWISE STATED ALL RESISTORS ARE 1/4 5%.

R57, R40 IS A SPARE; NO VALUE ASSIGNED.

CP BUSY; CONTROL OK; TIG RESTARTS — SLOT 12

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES: DECIMALS .XXX = .005, .XX = .02, .X = .1; ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

DIGITAL EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

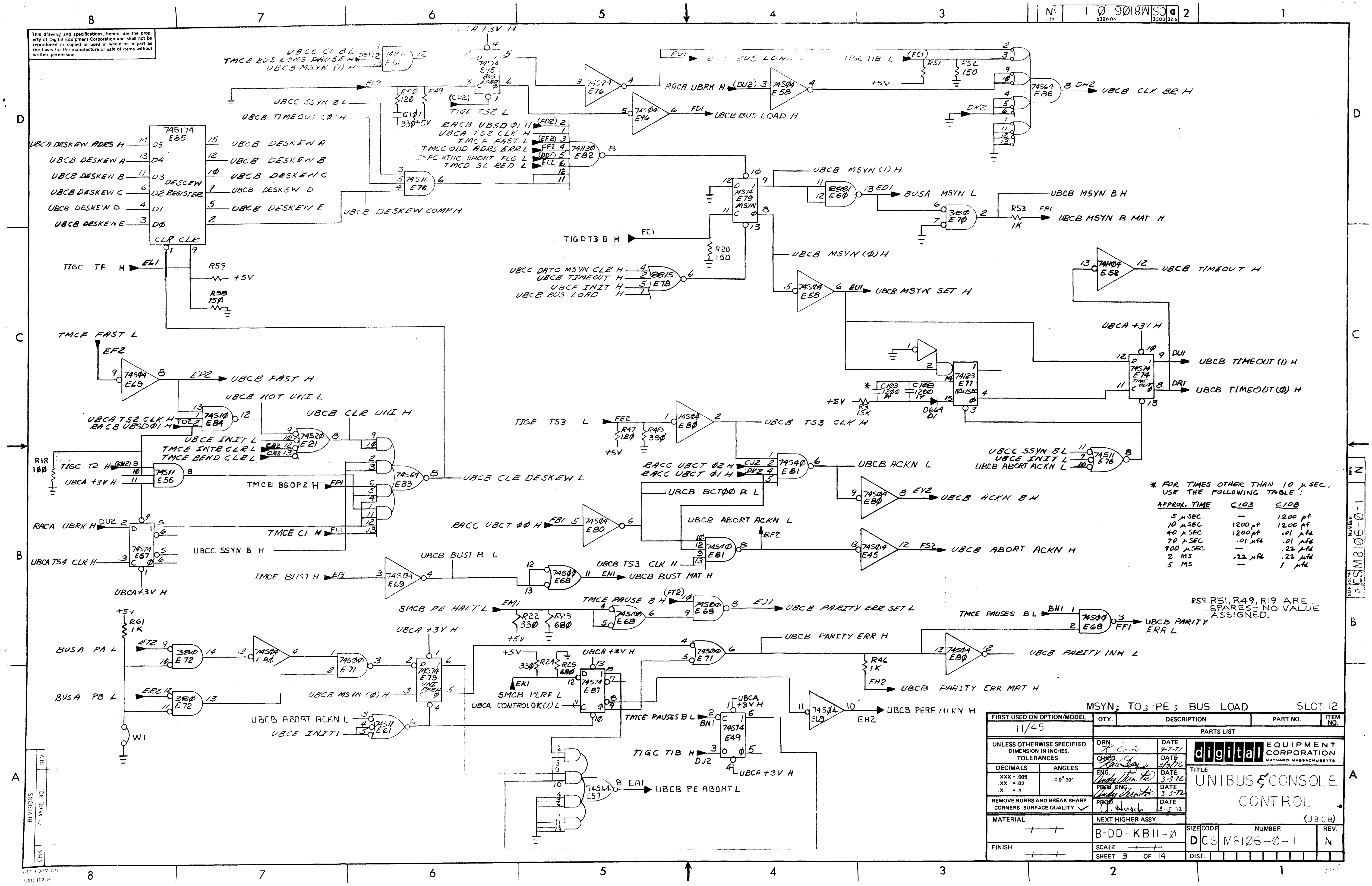
TITLE: UNIBUS & CONSOLE CONTROL (UBCA)

NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D, CODE CS, NUMBER M81Ø6-Ø-1, REV. N

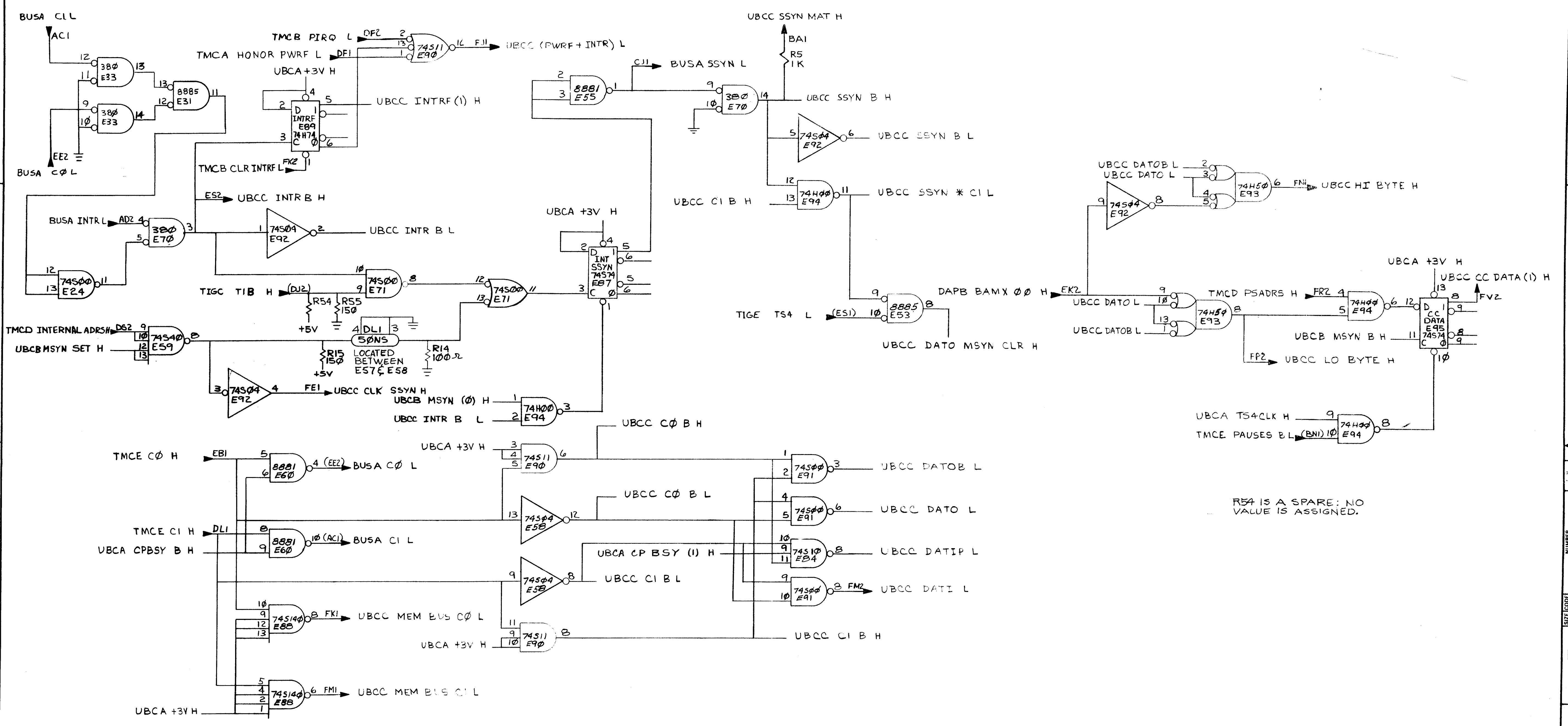
SHEET 2 OF 14

DEC FORM NO DRD 102-B



This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.
UBCC CI 8 L
TMCE BUS LONG PAUSE H
UBCB MSYN (1) H
74S74 E75 BUS LOAD
UBCA +3V H
UBCC SSYN B L
UBCB TIMEOUT (0) H
TIGE TS2 L
74S74 E76
74S04 E96
UBCB BUS LOAD H
RACA UBRK H
74S04 E58
TIGC TIB L
R51
R52 150
+5V
74S64 E86
UBCB CLK 8R H
DK2
74S174 E85
UBCA DESKEW ADRS H
UBCB DESKEW A
UBCB DESKEW B
UBCB DESKEW C
UBCB DESKEW D
UBCB DESKEW E
DESCEW REGISTER
CLR CLK
UBCB DESKEW COMP H
RACB UBSD 01 H
UBCA TS2 CLK H
TMCF FAST L
TMCC ODD ADRS ERR L
TSPC KT11C ABORT FLG L
TMCD SL RED L
74H30 E82
74S11 E76
UBCB MSYN (1) H
74S74 E79 MSYN
8881 E60
BUSA MSYN L
UBCB MSYN B H
380 E70
R53 1K
UBCB MSYN B MAT H
TIGDT3 B H
R20 150
UBCB MSYN (0) H
UBCC DATO MSYN CLR H
UBCB TIMEOUT H
UBCE INIT H
UBCB BUS LOAD H
8815 E78
74S04 E58
UBCB MSYN SET H
74H04 E52
UBCB TIMEOUT H
TIGC TF H
R59 +5V
R58 150
TMCF FAST L
74S04 E69
UBCB FAST H
UBCB NOT UNI L
74S10 E84
UBCA TS2 CLK H
RACB UBSD01 H
UBCB CLR UNI H
UBCE INIT L
TMCE INTR CLR L
TMCE BEND CLR L
74S20 E21
R18 100
TIGC T2 H
UBCA +3V H
74S11 E56
74S64 E83
UBCB CLR DESKEW L
TMCE BSOP2 H
TMCE CI H
RACA UBRK H
74S74 E67
UBCC SSYN B H
UBCA TS4 CLK H
UBCA +3V H
UBCA +3V H
74S74 E74 TIME OUT
UBCB TIMEOUT (1) H
UBCB TIMEOUT (0) H
74123 E77 10 μSEC
C103 1200 pf
C108 1200 pf
R3 15K
D664 D1
TIGE TS3 L
R47 180
R48 390
74S04 E80
UBCB TS3 CLK H
UBCC SSYN B L
UBCE INIT L
UBCB ABORT ACKN L
74S11 E76
RACC UBCT 02 H
RACC UBCT 01 H
74S40 E81
UBCB ACKN L
UBCB BCT00 B L
74S04 E80
UBCB ACKN B H
RACC UBCT 00 H
74S04 E80
UBCB ABORT ACKN L
74S40 E81
UBCB TS3 CLK H
74S04 E45
UBCB ABORT ACKN H
* FOR TIMES OTHER THAN 10 μSEC, USE THE FOLLOWING TABLE:
APPROX. TIME | C103 | C108
5 μSEC | — | 1200 pf
10 μSEC | 1200 pf | 1200 pf
40 μSEC | 1200 pf | .01 μfd
70 μSEC | .01 μfd | .01 μfd
900 μSEC | — | .22 μfd
2 MS | .22 μfd | .22 μfd
5 MS | — | 1 μfd
UBCB BUST B L
TMCE BUST H
74S04 E69
74S00 E68
UBCB BUST MAT H
R59 R51, R49, R19 ARE SPARES - NO VALUE ASSIGNED.
SMCB PE HALT L
R22 330
R23 680
TMCE PAUSE B H
74S00 E68
UBCB PARITY ERR SET L
TMCE PAUSES B L
74S00 E68
UBCB PARITY ERR L
+5V
R61 1K
BUSA PA L
380 E72
74S04 E80
74S00 E71
UBCA +3V H
74S74 E79 UNI PERF
UBCB PARITY ERR H
74S00 E71
74S04 E80
UBCB PARITY INH L
R46 1K
UBCB PARITY ERR MAT H
BUSA PB L
380 E72
UBCB MSYN (0) H
R24 330
R25 680
SMCB PERF L
UBCA CONTROLOK(1) L
74S74 E87
UBCB ABORT ACKN L
UBCE INIT L
74S11 E61
W1
74S04 E69
UBCB PERF ACKN H
TMCE PAUSES B L
74S74 E49
TIGC TIB H
UBCA +3V H
74S64 E57
UBCB PE ABORT L
MSYN; TO; PE; BUS LOAD
SLOT 12
FIRST USED ON OPTION/MODEL 11/45
QTY. DESCRIPTION PART NO. ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1
ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY
MATERIAL
FINISH
DRN. DATE 9-7-71
CHKD. DATE 3/3/72
ENG. DATE 3-3-72
PROD. ENG. DATE 3-3-72
PROD. DATE 3-15-72
NEXT HIGHER ASSY. B-DD-KB11-0
SCALE
SHEET 3 OF 14
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
TITLE UNIBUS & CONSOLE CONTROL (UBCB)
SIZE D CODE CS NUMBER M8106-0-1 REV. N
DIST.
REVISIONS REV CHANGE NO. CHK
DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




R54 IS A SPARE: NO VALUE IS ASSIGNED.

INTERNAL SSYN; INTRF; CC DATA

SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/ /—

FINISH —/ /—

DRN. DATE 24JUN71
CHK'D. DATE 3/3/72
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL (UBCC)

NEXT HIGHER ASSY. B-DD-KB11-0

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8106-0-1 | N |

SCALE —/ /—

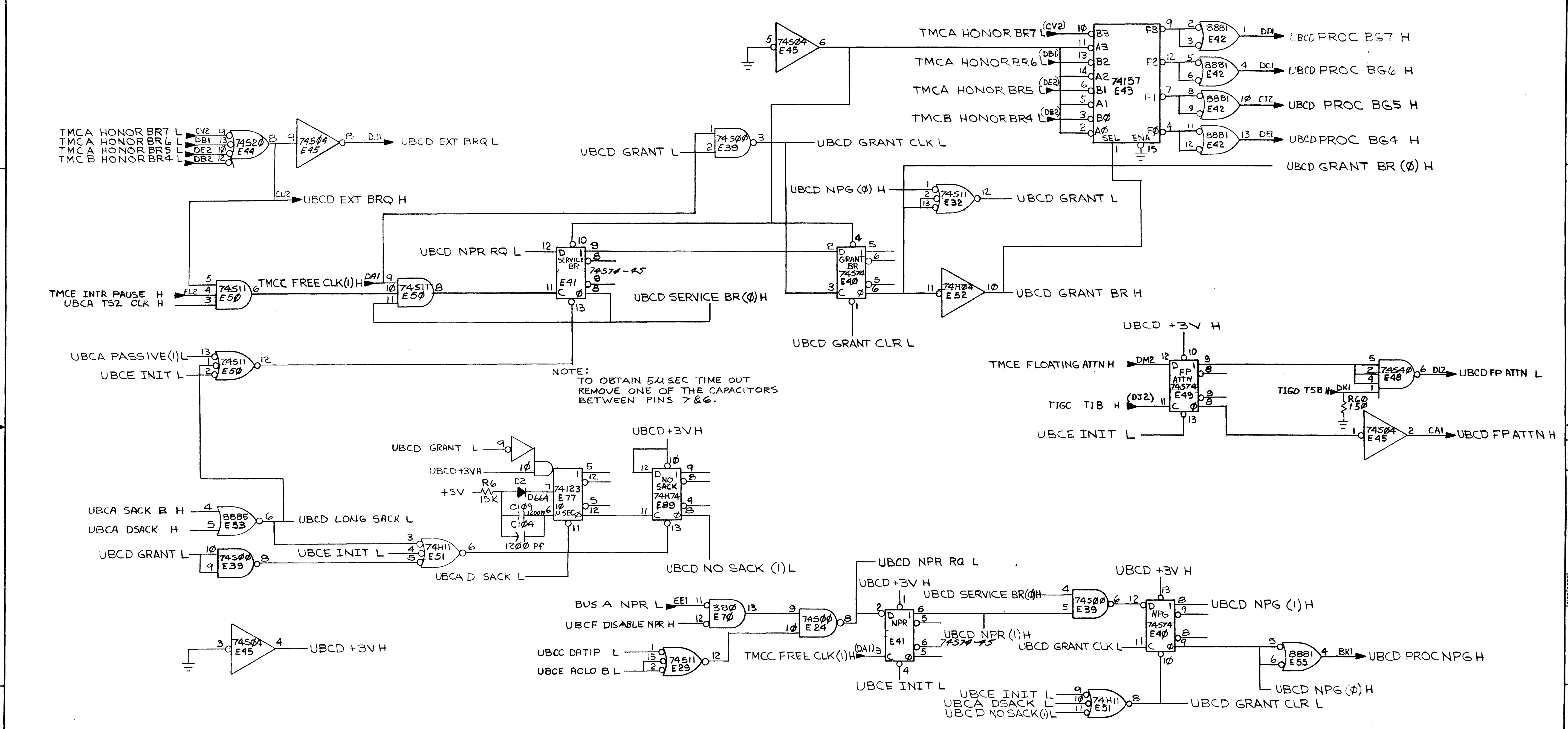
SHEET 4 OF 14

DIST.

REVISIONS

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NPR-BR SERVICING; FP ATTENTION SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH —/—

DRN. DATE 6/24/71 — CHKD. DATE 3/3/72 — ENG. DATE 3-3-72 — PROJ. ENG. DATE 3-3-72 — PROD. DATE 3-15-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —/— SHEET 5 OF 14

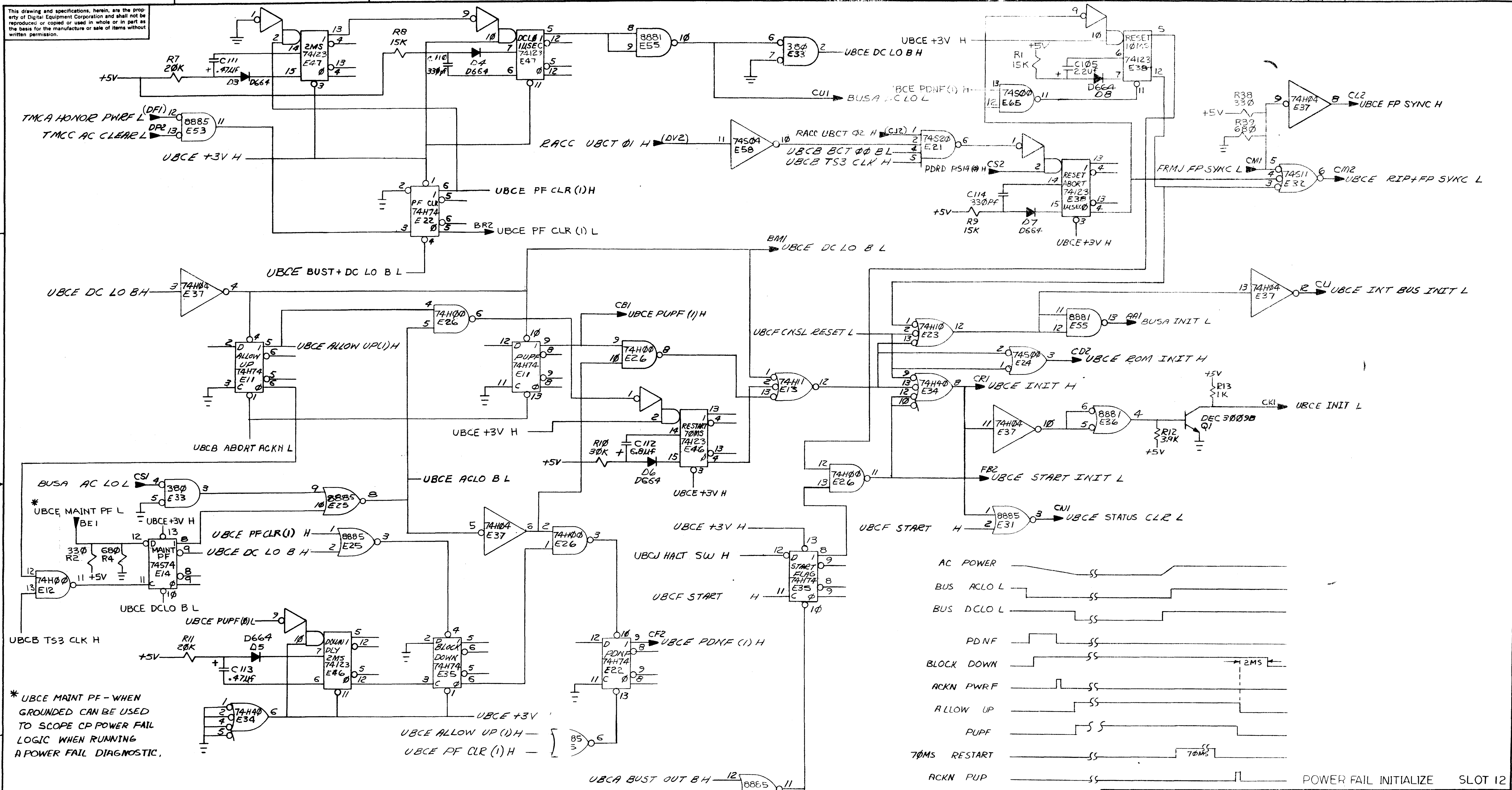
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL (UBC)

SIZE D CODE CS NUMBER M8106-Ø-1 REV. N

DIST.

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS: .XXX = .005, .XX = .02, X = .1 — ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. DATE 6-25-71
CHK'D DATE 3-3-72
ENG. DATE 3-3-72
PROJ ENG. DATE 3-3-72
PROD. DATE 3-15-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —

SHEET 6 OF 14

**digital** EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

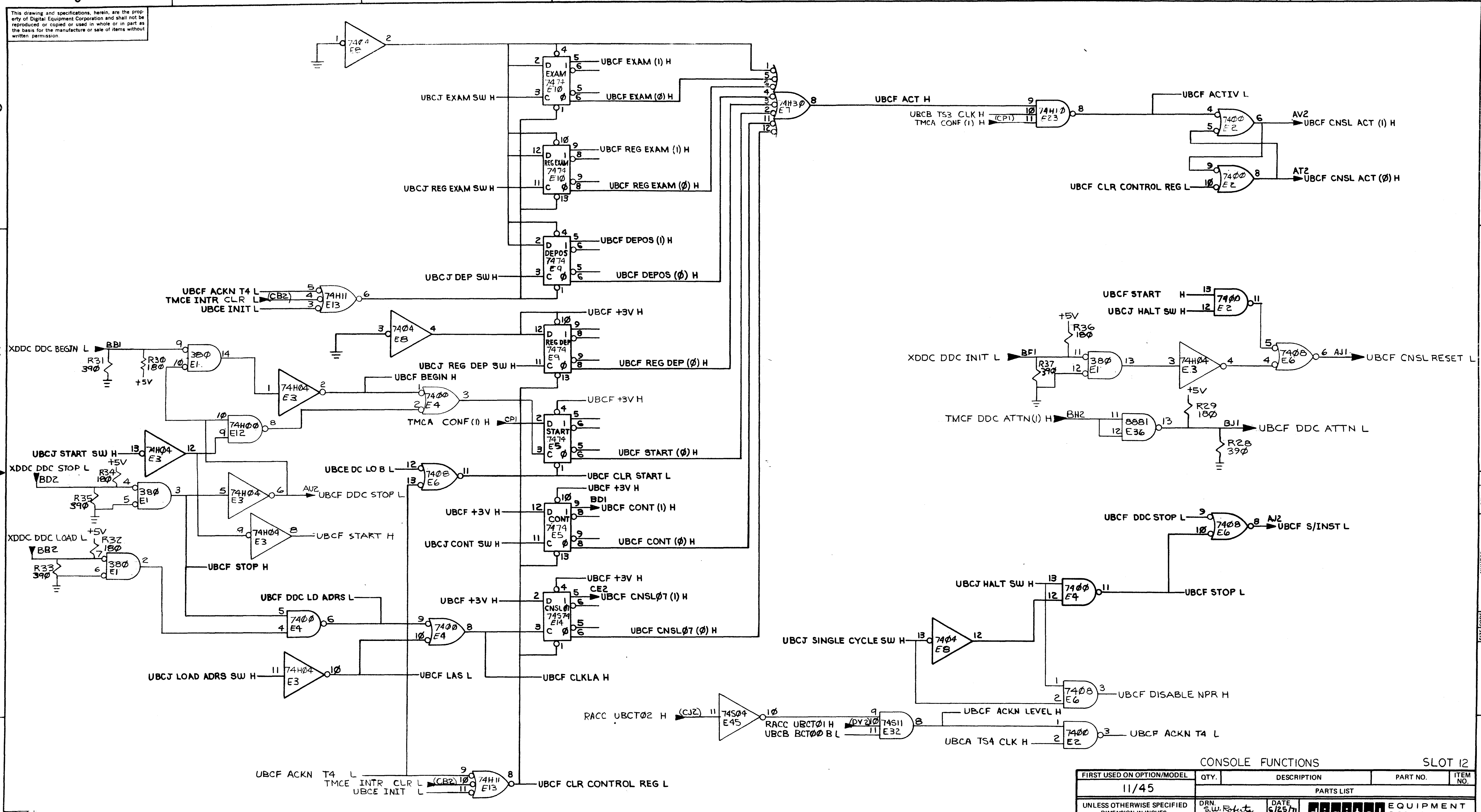
TITLE: UNIBUS & CONSOLE CONTROL (UBCE)

SIZE D CODE CS NUMBER M8106-Ø-1 REV. N

DIST.

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




CONSOLE FUNCTIONS SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —//—
FINISH —//—

DRN. S.W. Roberts DATE 6/25/71
CHK'D DATE
ENG. DATE 3-3-72
PROJ. ENG. DATE 3-3-72
PROD. DATE 3-15-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL (UBCF)

NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D CODE CS NUMBER M81Ø6-Ø-1 REV N

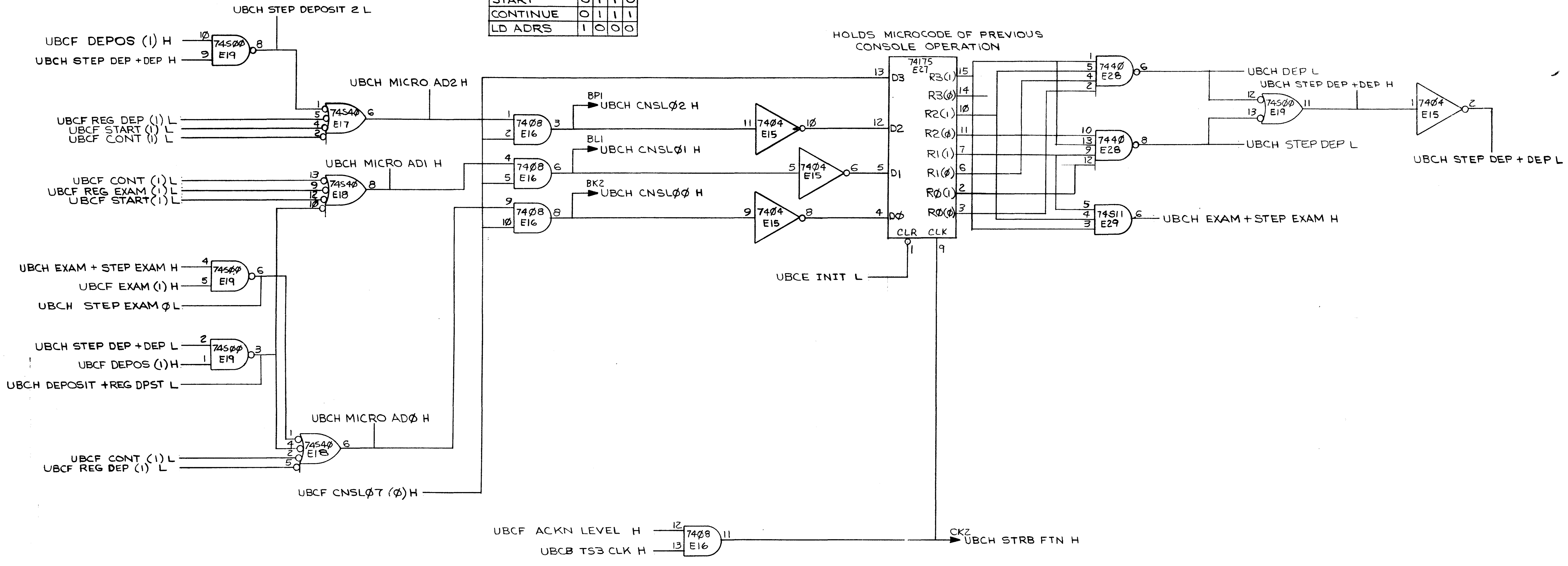
SCALE —//— SHEET 7 OF 14

D CS B-DD-11/45-Ø N

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

| CONSOLE FUNCTION | MICRO ADRS BIT 7 | 2 | 1 | 0 |
|---|---|---|---|---|
| EXAM | 0 | 0 | 0 | 0 |
| STEP EXAM | 0 | 0 | 0 | 1 |
| REG EXAM | 0 | 0 | 1 | 0 |
| DEPOSIT | 0 | 0 | 1 | 1 |
| STEP DEPOSIT | 0 | 1 | 0 | 0 |
| REG DEPOSIT | 0 | 1 | 0 | 1 |
| START | 0 | 1 | 1 | 0 |
| CONTINUE | 0 | 1 | 1 | 1 |
| LD ADRS | 1 | 0 | 0 | 0 |




CONSOLE μ ADRS

SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —//—
FINISH —//—

DRN. DATE · CHKD. DATE · ENG. DATE 3-3-72 · PROJ. ENG. DATE · PROD. DATE 3-15-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL (UBCH)

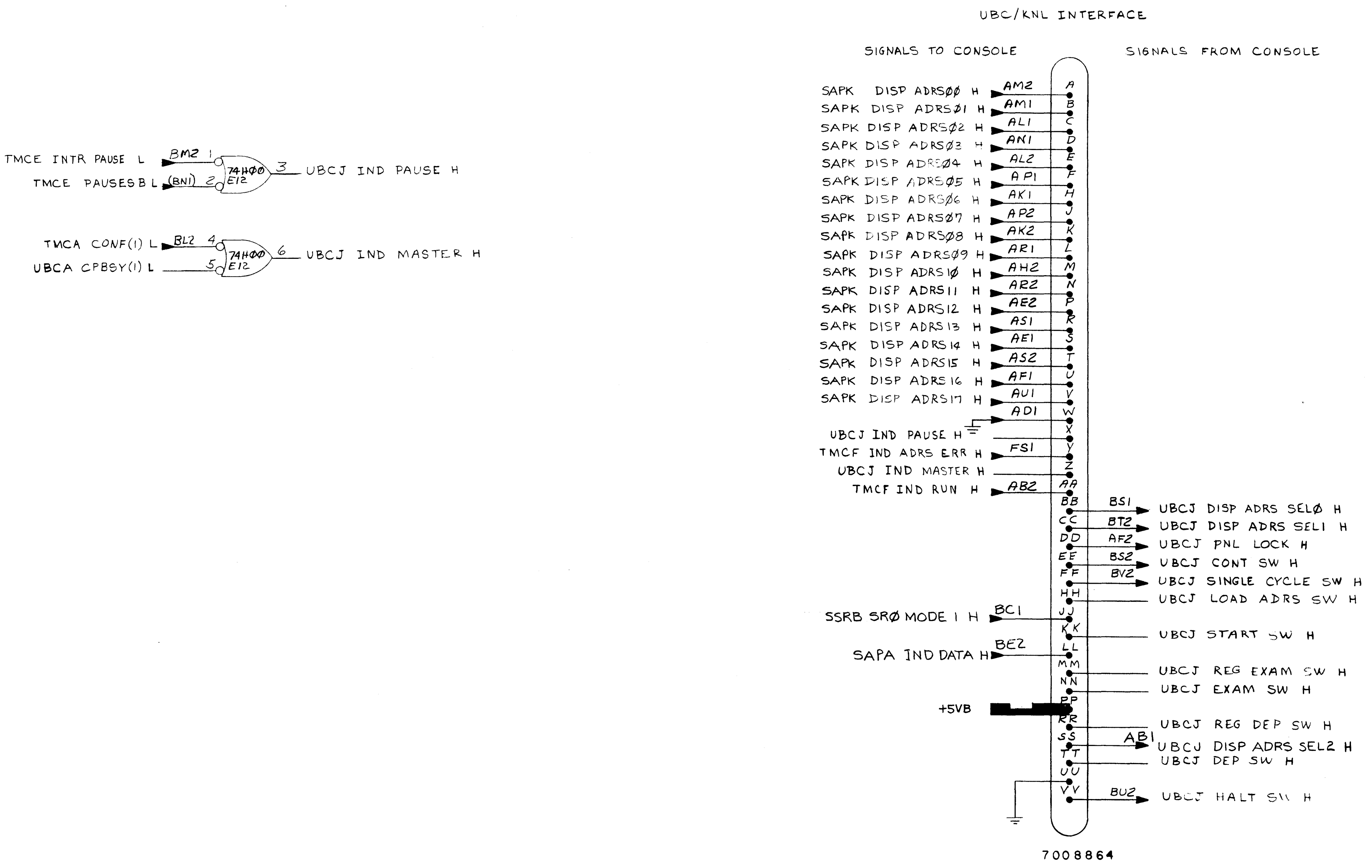
NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D CODE CS NUMBER M8106-Ø-1 REV. N

SCALE —//— SHEET 8 OF 14

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




CONSOLE CABLE; INDICATORS SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

DECIMALS .XXX = .005 .XX = .02 .X = .1 — ANGLES ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL — FINISH —

DRN. DATE 6-25-71
CHK'D. DATE 3/2/72
ENG. DATE 3-3-72
PROJ. ENG. DATE 3-3-72
PROD. DATE 3-15-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE UNIBUS & CONSOLE CONTROL (UBCJ)

NEXT HIGHER ASSY. B-DD-KB11 Ø

SIZE D CODE CS NUMBER M8106-Ø-1 REV. N

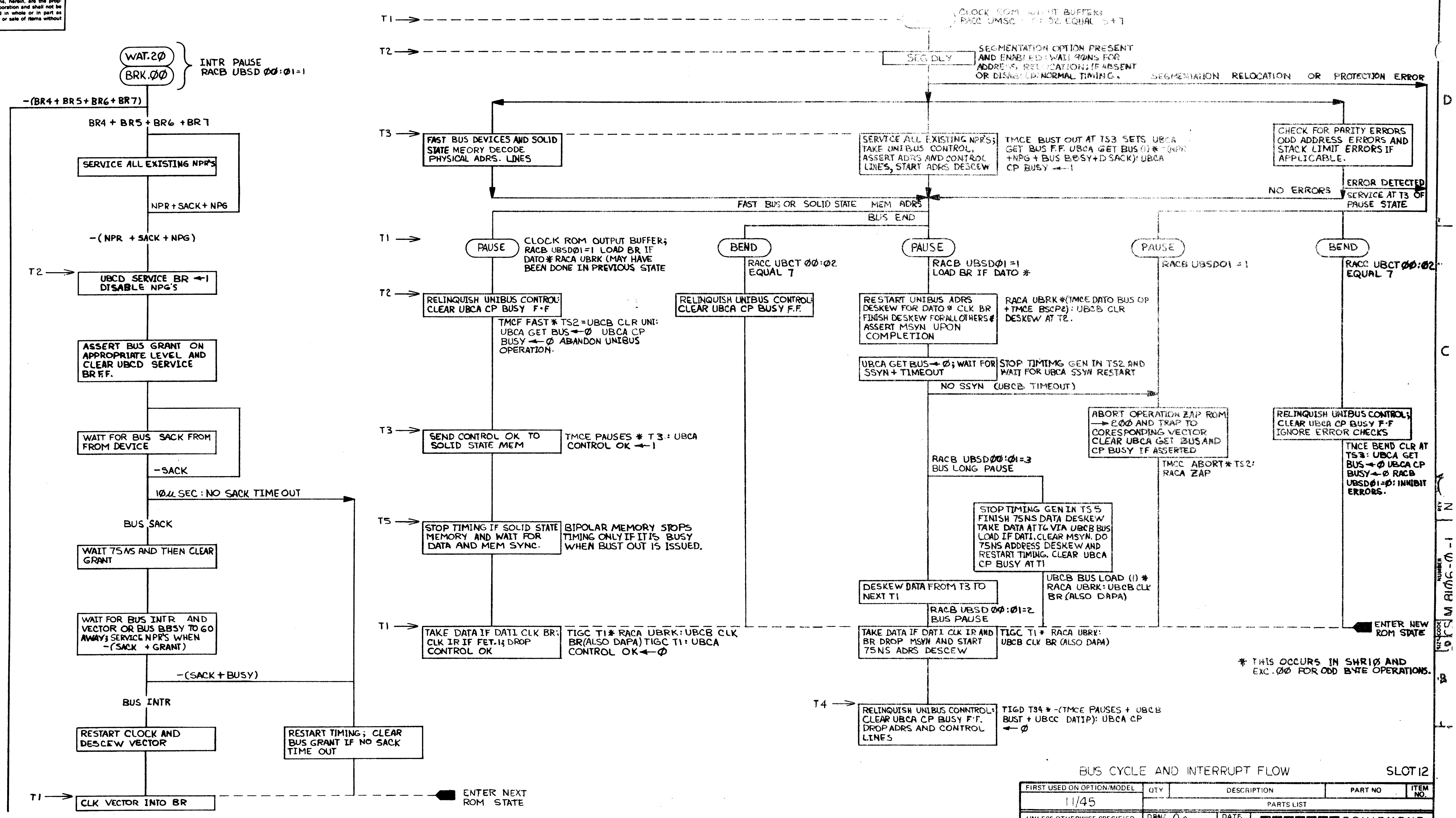
SCALE — SHEET 9 OF 14

DIST.

REVISIONS CHANGE NO. CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE:
IF PROCESSOR HAS M8104 REV "C" AND KB11-A ECO #13 USE PRINT UBCN FOR UNIBUS TIMING.

BUS CYCLE AND INTERRUPT FLOW

SLOT 12

| FIRST USED ON OPTION/MODEL | QTY | DESCRIPTION | PART NO | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS XXX ± .005, XX ± .02, X ± .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

DRN DATE 3/14/72 — CHK'D DATE 4/20/72 — ENG DATE 4/20/72 — PROJ ENG DATE 4/19/72 — PROD DATE 5/1/72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: UNIBUS & CONSOLE CONTROL (UBCK)

NEXT HIGHER ASSY: B-DD-KB11-A

SIZE D — CODE CS — NUMBER M8106-Ø-1 — REV N

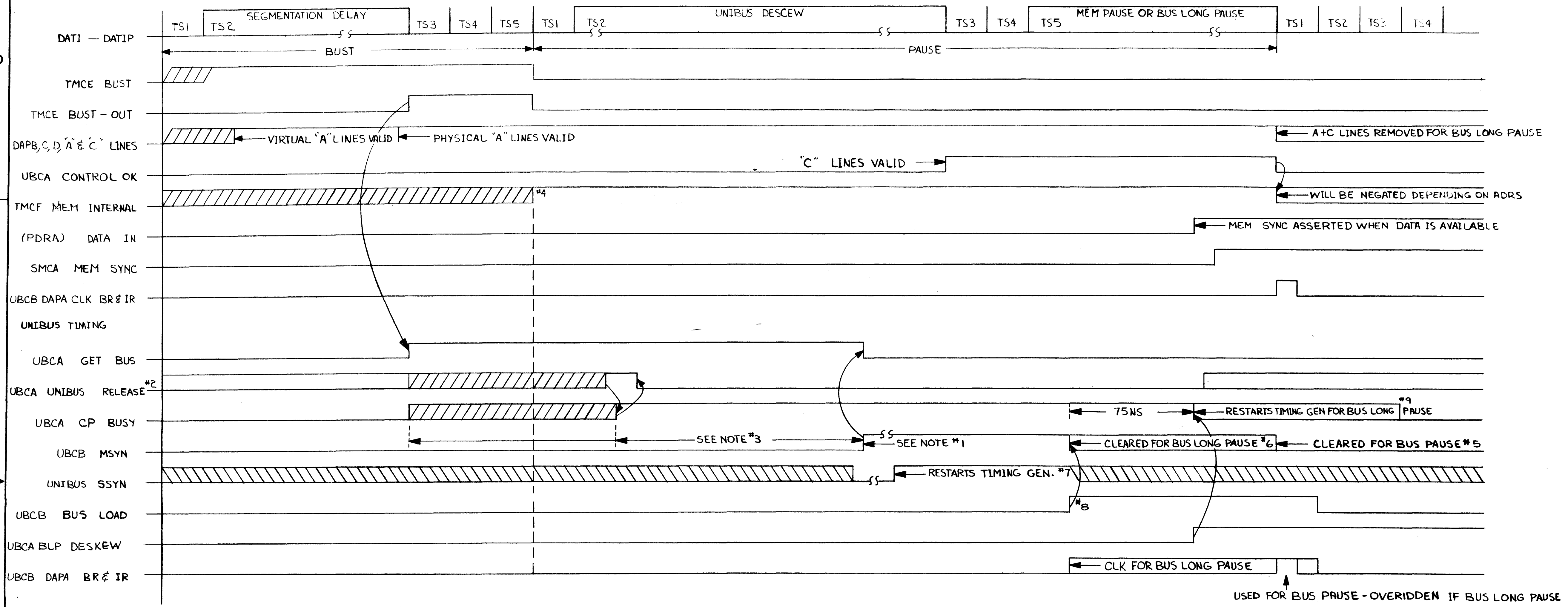
SCALE — SHEET 10 OF 14 — DIST.

REVISIONS — REV — CHANGE NO — CHK

DEC FORM NO DRD 102-B

BRUNING 40-522 15840

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




1. MSYN IS NOT SET IF ODD ADRS, SEGMENTATION, PARITY OR STACK LIMIT ERROR HAS OCCURED. ERROR CONDITION RESTARTS TIMING GENERATOR AND ROM IS FORCED TO ZAP.ØØ

2. UNIBUS RELEASE = -(NPG + NPR + DSACK + BBSY)

3. MSYN IS SET 150 NS AFTER [illegible] BUSY IS SET OR WHENEVER SSYN IS NOT PRESENT AFTER THE 150NS DESCEW

4. IF ADRS IS INTERNAL OR SOLID STATE MEMORY UNIBUS CNTL LOGIC IS CLEARED, DESCEW STOPPED, MSYN NOT ASSERTED.

5. BUS PAUSE - ADRS WILL NOT BE CHANGED IMMEDIATELY UPON EXITING PAUSE STATE

6. BUS LONG PAUSE - 75NS ADRS DESCEW AFTER NEGATION OF MSYN MUST BE DONE BEFORE TIMING GEN. RESTARTS AT T5 OF PAUSE CYCLE BECAUSE "A" & C LINES WILL CHANGE UPON EXITING PAUSE STATE.

7. IF NON-EXISTANT MEMORY, TIMEOUT RESTARTS CLOCK.

8. BUS LOAD IS SET ONE CLOCK AFTER T5 TO ALLOW COMPLETION OF WRITE TO SCRATCHPAD FOR PREVIOUS CYCLE BEFOR NEW IR & BR ARE LOADED

9. CLEARED 75NS AFTER MSYN → Ø: T4 FOR BUS PAUSE

NOTE:
IF PROCESSOR HAS M8104 REV C AND KB11-A ECO #13 USE PRINT UBCP FOR UNIBUS TIMING.

DATI - DATIP TIMING DIAGRAM

SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN — DATE 4/12/72
CHK'D — DATE
ENG. — DATE
PROJ. ENG. — DATE
PROD. — DATE 5-1-72

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: UNIBUS & CONSOLE CONTROL (UBCL)

NEXT HIGHER ASSY. B-DD-KB11-A

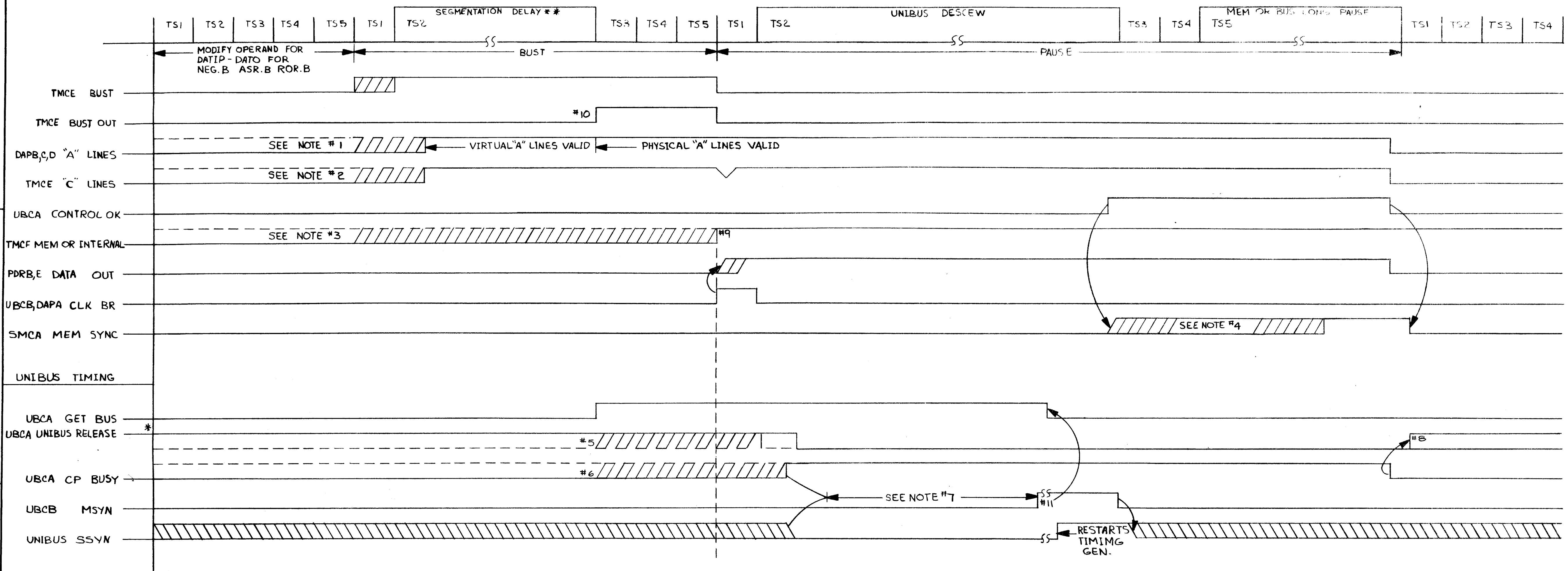
SIZE D | CODE CS | NUMBER M8106-Ø-1 | REV. N

SCALE — SHEET 11 OF 14 DIST.

BRUNING 40-522 15840
DEC FORM NO DRD 102-B

8 7 6 5 4 3 2 1

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTES:

* UNIBUS RELEASE = –(NPR+NPG+BBSY+SACK)

** TIMING GEN: PROVIDES DELAY EQUIVELENT TO 3 TIME STATES FOR RELOCATION OF ADDRESSES IF SEGMENTATION IS PRESENT AND ENABLED

1. ADDRESS WILL NOT BE CHANGING IF DATO IS PRECEEDED BY DATIP (DOTTED LINE SHOWS DATIP)
2. CONTROL LINES WILL SHOW DATIP OR ELSE ARE INVALID UNTIL CONTROL OK
3. MEM OR INTERNAL WILL BE TRUE UPON ENTERING DATO IF ADDRESS WAS SEMI CONDUCTOR MEMORY OR INTERNAL FROM PREVIOUS DATIP
4. MEM SYNC IS ASSERTED BY SEMI CONDUCTOR MEMORY AS SOON AS DATA IS TAKEN-IF DATA IS TAKEN AND MEM SYNC ASSERTED PRIOR TO T5 OF THE PAUSE CYCLE TIMING GENERATOR IS NOT STOPPED IN T5
5. UNIBUS RELEASE WILL NOT BE TRUE IF PREVIOUS OPERATION WAS A DATIP TO A UNIBUS ADDRESS.
6. CP BUSY WILL BE ASSERTED UPON ENTRY INTO DATO IF PREVIOUS OPERATION WAS A DATIP TO A UNIBUS ADDRESS
7. DESKEW FOR "A" "C" "D" LINES IS 150NS STARTING WHEN CP BUSY IS SET AND SSYN FROM THE PREVIOUS BUS OPERATION IS NEGATED.
8. UNIBUS RELEASE BECOMES TRUE IF NO NPR DEVICE HAS BEEN GIVEN CONTROL OR IS REQUESTING PRIOR TO CP BSY GETING CLEARED
9. IF ADDRESS IS SEMI CONDUCTOR MEMORY OR INTERNAL, UNIBUS LOGIC IS CLEARED DESKEW IS STOPPED AND MSYN IS NOT ASSERTED.
10. BUST OUT IS INHIBITED IN IRD.ØØ FOR CONDITIONAL BUST (MSC=5) IF BIN * SM123 + BR INST * BRQ TRUE + DM123 * –(BIN * SM61 + BR INSTR)
11. MSYN IS NOT SET IF AN ODD ADRS, STACK LIMIT RED SEGMENTATION OR PARITY ERROR HAS OCCURED

NOTE:
1. ALL SIGNALS ARE SHOWN TRUE WHEN HIGH

NOTE:
IF PROCESSOR HAS M81Ø4 REV "C" AND KB11-A ECO #13, USE PRINT UBCP FOR UNIBUS TIMING.

DATO TIMING DIAGRAM — SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS: .XXX = .005, .XX = .02, .X = .1 — ANGLES: ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL — FINISH

DRN [signature] DATE 3/25/[illegible]
CHK'D [signature] DATE [illegible]
ENG. [signature] DATE 4/29/[illegible]
PROJ/ENG. [signature] DATE [illegible]
PROD. [signature] DATE 5-1-[illegible]

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: UNIBUS & CONSOLE CONTROL (UBCM)

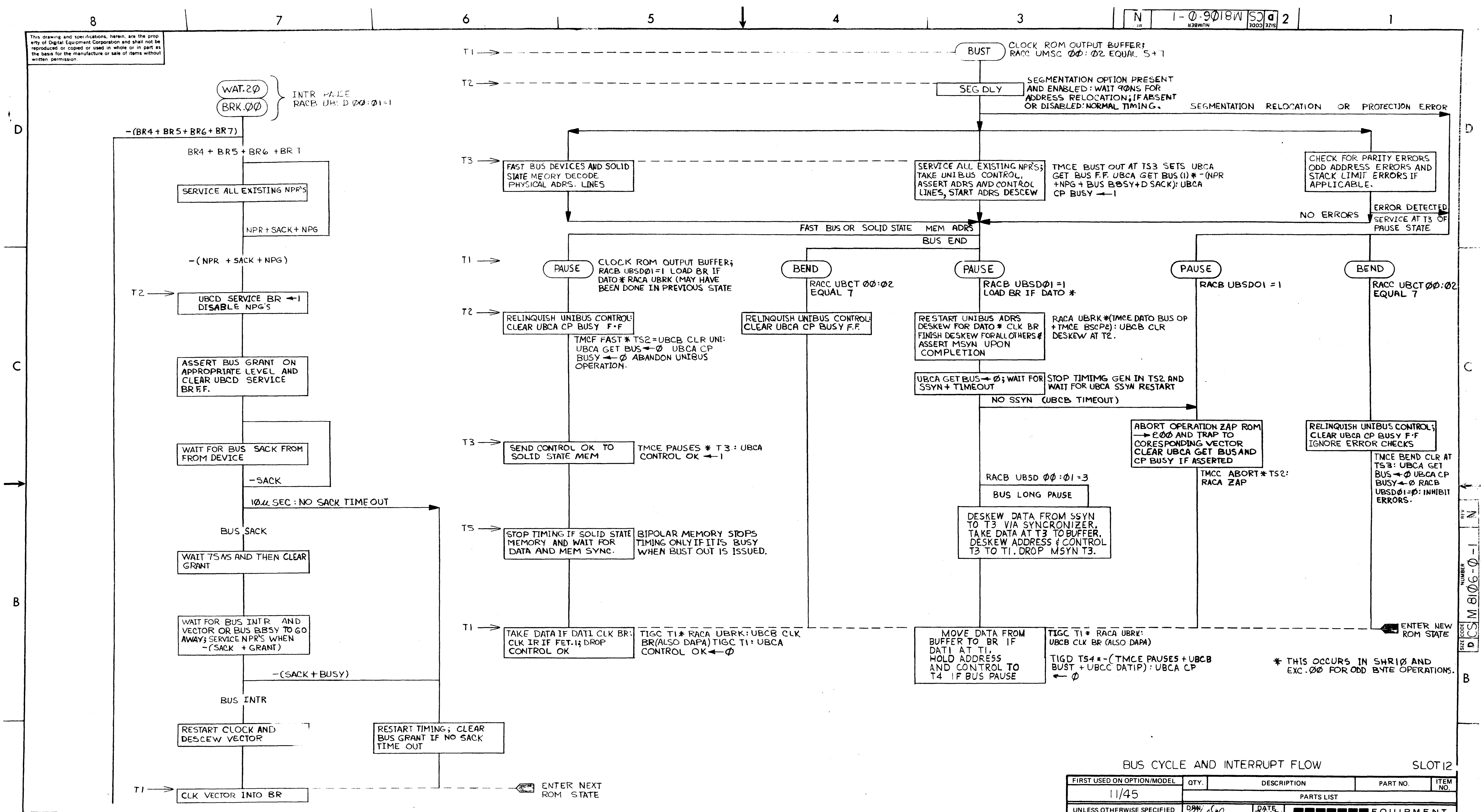
NEXT HIGHER ASSY.: B-DD-KB11-A

SIZE: D — CODE: CS — NUMBER: M 81Ø6-Ø-1 — REV.: N

SCALE — SHEET 12 OF 14 — DIST.

REVISIONS — REV — CHANGE NO — CHK

BRUNING 40-522 15840 — DEC FORM NO DRD 102-B




BUS CYCLE AND INTERRUPT FLOW

SLOT 12

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX ± .005 .XX ± .02 .X ± .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL — FINISH —

DRN / DATE / CHK'D / DATE / ENG. / DATE / PROJ. ENG. / DATE / PROD. / DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: UNIBUS & CONSOLE CONTROL (UBCN)

NEXT HIGHER ASSY. B-DD-KB11-A

SIZE D CODE CS NUMBER M81Ø6-Ø-1 REV. N

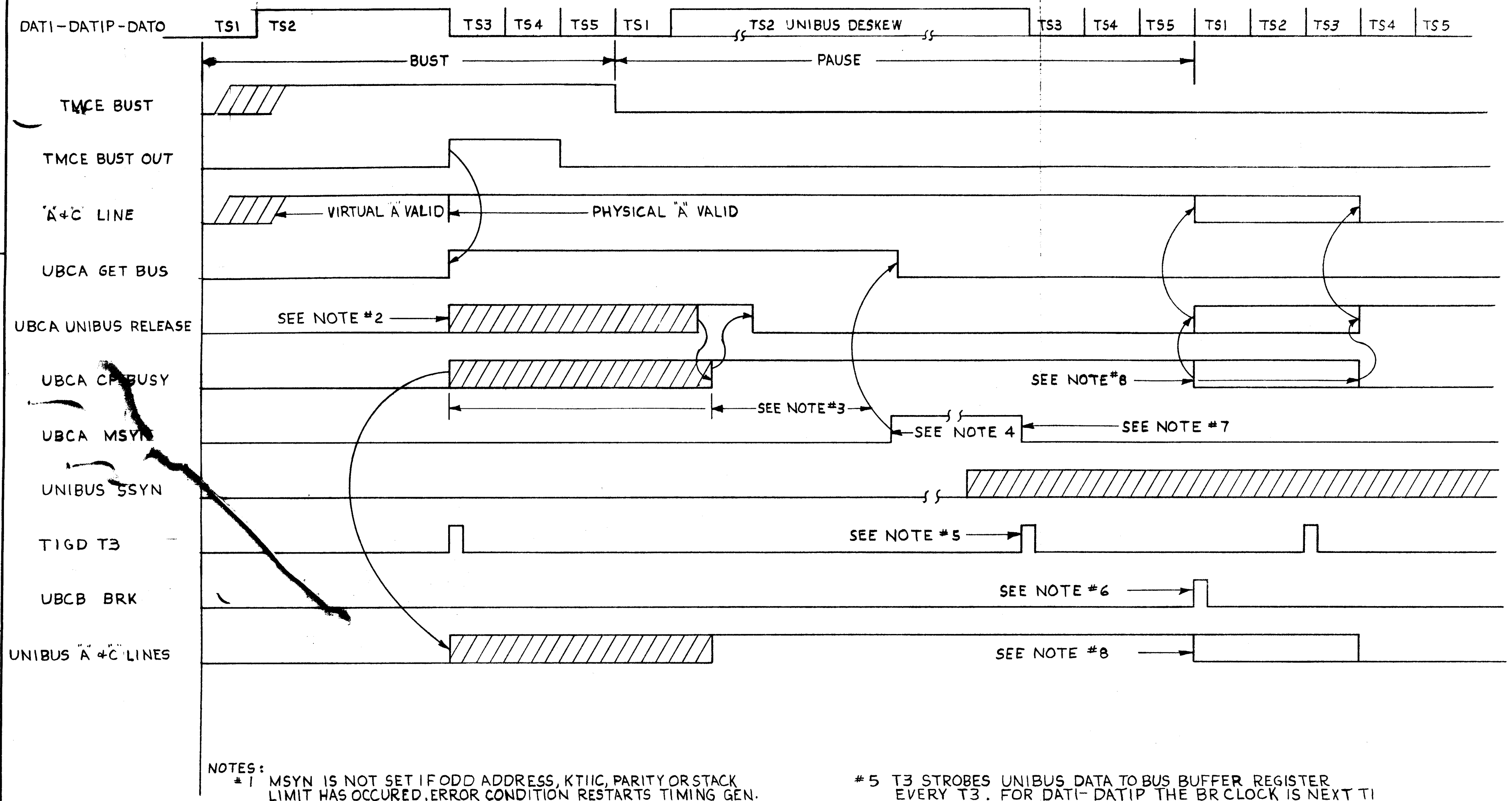
SCALE — SHEET 13 OF 14

DIST.

REVISIONS — CHANGE NO — REV — CHK

BRUNING 40-522 15840 DEC FORM NO DRD 102-B

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION
COPYRIGHT © DIGITAL EQUIPMENT CORPORATION




NOTES:

#1 MSYN IS NOT SET IF ODD ADDRESS, KT11C, PARITY OR STACK LIMIT HAS OCCURED. ERROR CONDITION RESTARTS TIMING GEN. AND ROM IS FORCED TO ZAP.00

#2 UNIBUS RELEASE = -(NPG + NPR + SACK + B BUSY)

#3 MSYN IS SET 150 NS AFTER CP BUSY OR WHENEVER SSYN IS NOT PRESENT AFTER 150 NS DESKEW.

#4 IF ADRS IS INTERNAL OR SOLID STATE MEMORY, UNIBUS CONTROL LOGIC IS CLEARED, DESKEW STOPPED, MSYN NOT ASSERTED.

#5 T3 STROBES UNIBUS DATA TO BUS BUFFER REGISTER EVERY T3. FOR DATI-DATIP THE BR CLOCK IS NEXT T1

#6 BRK IS DEPENDENT ON ROM TO LOAD BUS TO BR.

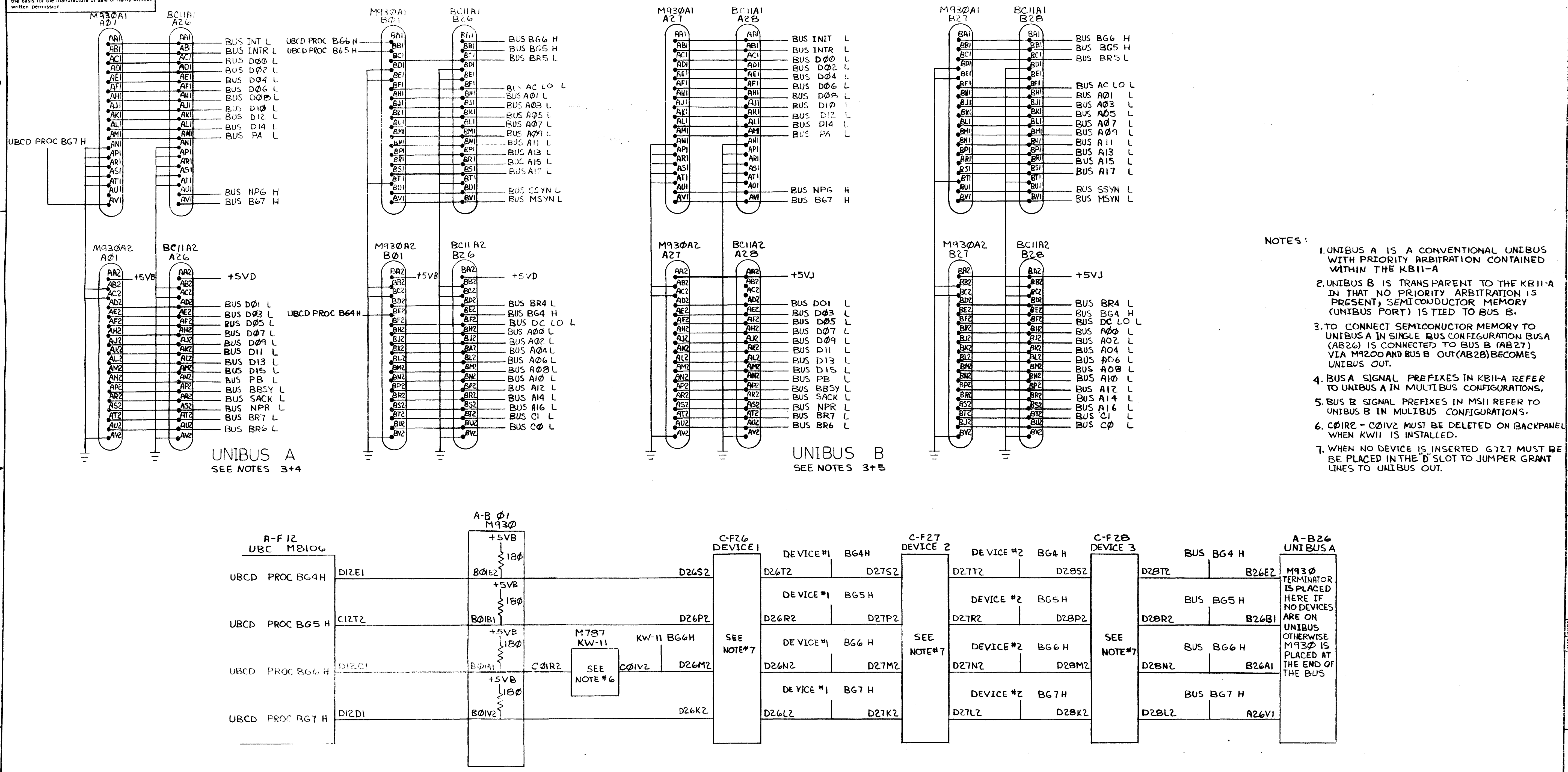
#7 75 NS DESKEW FOR MSYN IS OBTAINED BY THE FACT THAT SSYN MUST GO THROUGH 2 RANKS OF SYNCRONIZATION

#8 FOR BUS LONG PAUSE ADDRESS + CONTROL IS DESKEWED FROM T3 TO T1. FOR BUS PAUSE THEY ARE HELD TO TS4 OF THE NEXT ROM CYCLE.

SLOT 12

| | | | | |
|---|---|---|---|---|
| FIRST USED ON OPTION/MODEL: 11/45 | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
| | PARTS LIST | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES; TOLERANCES: DECIMALS .xxx = .005, .xx = .02, .x = .1; ANGLES ±0 30' | DRN. R. Hale, DATE 5/24/73 | digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS | | |
| REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY | CHK'D DATE 5/24/73; ENG. Allan Nelson DATE; PROJ. ENG. DATE; PROD. DATE 5/30/73 | TITLE: UNIBUS & CONSOLE CONTROL (UBCP) | | |
| MATERIAL | NEXT HIGHER ASSY. B-DD-KB11-A | SIZE D, CODE CS, NUMBER M8106-0-1 | REV. N | |
| FINISH | SCALE; SHEET 14 OF 14 | DIST. | | |

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTES:

1. UNIBUS A IS A CONVENTIONAL UNIBUS WITH PRIORITY ARBITRATION CONTAINED WITHIN THE KB11-A
2. UNIBUS B IS TRANSPARENT TO THE KB11-A IN THAT NO PRIORITY ARBITRATION IS PRESENT, SEMICONDUCTOR MEMORY (UNIBUS PORT) IS TIED TO BUS B.
3. TO CONNECT SEMICONDUCTOR MEMORY TO UNIBUS A IN SINGLE BUS CONFIGURATION BUS A (AB26) IS CONNECTED TO BUS B (AB27) VIA M9200 AND BUS B OUT (AB28) BECOMES UNIBUS OUT.
4. BUS A SIGNAL PREFIXES IN KB11-A REFER TO UNIBUS A IN MULTIBUS CONFIGURATIONS.
5. BUS B SIGNAL PREFIXES IN MS11 REFER TO UNIBUS B IN MULIBUS CONFIGURATIONS.
6. CØIR2 - CØIV2 MUST BE DELETED ON BACKPANEL WHEN KW11 IS INSTALLED.
7. WHEN NO DEVICE IS INSERTED G727 MUST BE BE PLACED IN THE 'D' SLOT TO JUMPER GRANT LINES TO UNIBUS OUT.

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES
DECIMALS .XXX ± .005, .XX ± .02, .X ± .1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL —
FINISH —

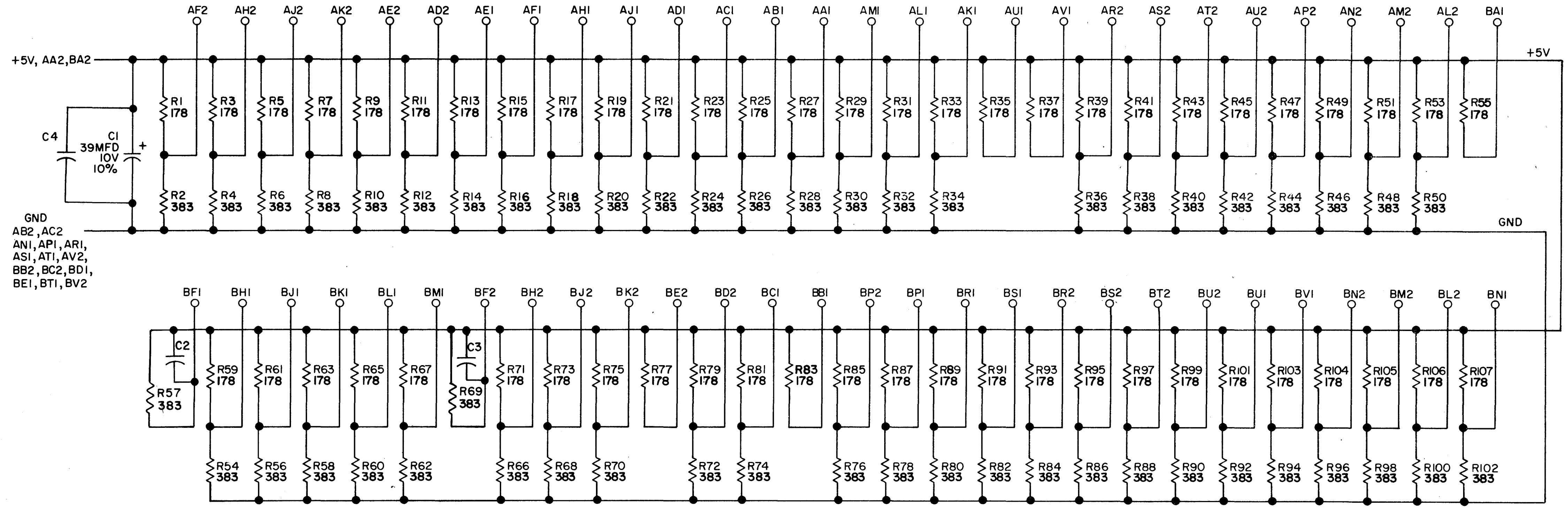
DRN. DATE 3/15/72 — CHK'D. DATE — ENG. DATE — PROJ. ENG. DATE — PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE
# BUS CABLES AND GRANT CHAIN
(BUS)

NEXT HIGHER ASSY. B-DD-KB11-A
SIZE D CODE IC NUMBER KB11-A-BG REV.
SCALE — SHEET 1 OF 1
DIST.

THIS SCHEMATIC IS FURNISHED ONLY FOR TEST AND MAINTENANCE PURPOSES. THE CIRCUITS ARE PROPRIETARY IN NATURE AND SHOULD BE TREATED ACCORDINGLY.
COPYRIGHT 1969 BY DIGITAL EQUIPMENT CORPORATION




UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1/4W, 1%
CAPACITORS ARE .001UF, 250V, 20%

| REVISIONS | | | |
|---|---|---|---|
| CHK | CHG NO. | REV. | |
| | 00001 | A | |
| | 00002 | B | |
| | 00003 | C | b. j. haile 5-29-73 P. JANSON 6-5-73 |

| | |
|---|---|
| DRN. BUTLER | DATE 11-21-69 |
| CHK'D | DATE |
| ENG. | DATE |
| PROD. | DATE |

TRANSISTOR & DIODE CONVERSION CHART

| DEC | EIA | DEC | EIA |
|---|---|---|---|

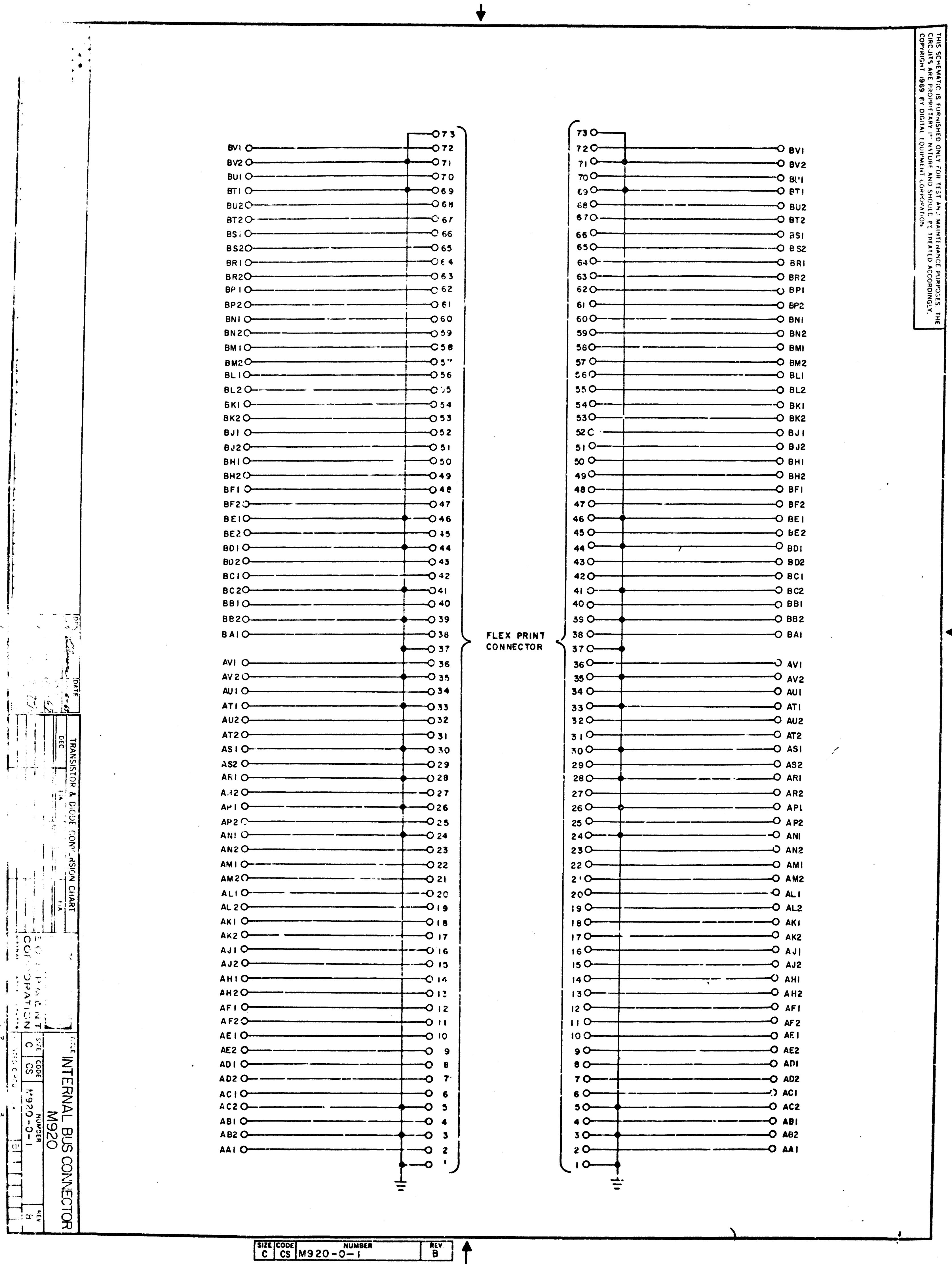
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE BUS TERMINATOR M930

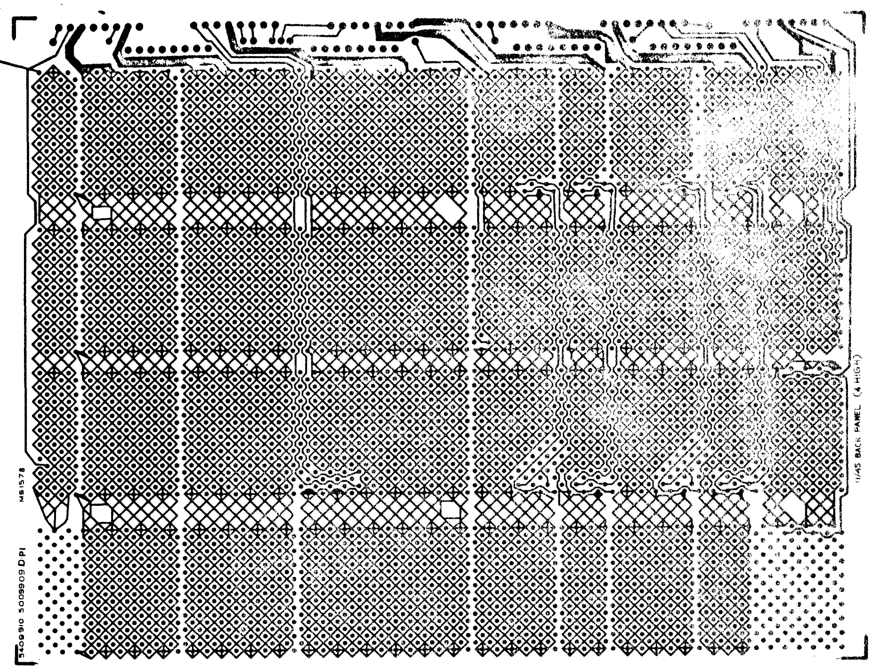
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| C | CS | M930-0-1 | C |

PRINTED CIRCUIT REV. C

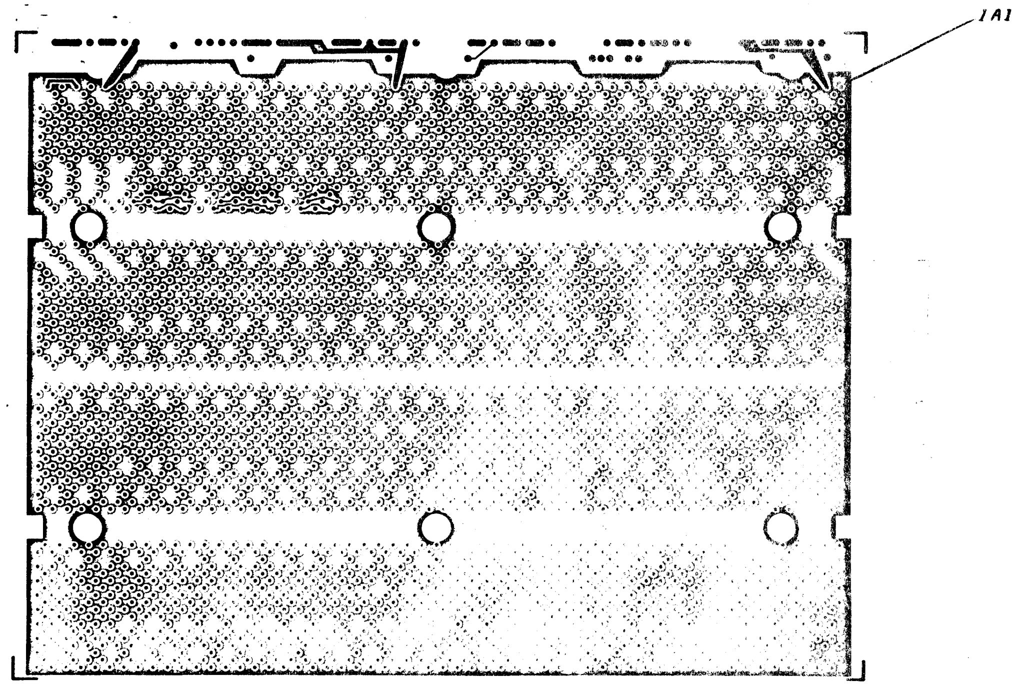
DEC FORM NO. DRC 102




| SIZE | CODE | NUMBER | REV |
|---|---|---|---|
| C | CS | M920-0-1 | B |




SOLDER SIDE (SIDE 2)




BLOCK SIDE (SIDE 1)

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| | | ASSY-DRILLING HOLE LAYOUT | D-AH-5409910-0-5 | 5 |
| | | 11/45 BACK PANEL | E-IA-5009909-0-0 | 4 |
| REF | | X-Y COORDINATE HOLE LOC | K-CO-5409910-0-4 | 3 |
| REF | | MODULE HISTORY | E-MH-5409910-0-6 | 2 |
| 1 | | ETCHED CIRCUIT BOARD | 5009909 | 1 |

PARTS LIST

ETCH BOARD REV D

| IC TYPE | GND | +5V |
|---|---|---|

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

| DEC NO. | EIA NO. | DEC NO. | EIA NO. |
|---|---|---|---|

SEMICONDUCTOR CONVERSION CHART

REVISIONS: ORIGINATED A; C 5409910-0000HH C; J. SWANSON

DRN. K. Davis DATE 2-21-72
CHK'D DATE /72
ENG. DATE /72
PROJ. ENG. DATE /72
PROD. DATE

NEXT HIGHER ASSY E-AD-7008753-0-0

SCALE 1/1 SHEET 1 OF 1

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE CIRCUIT SCHEMATIC

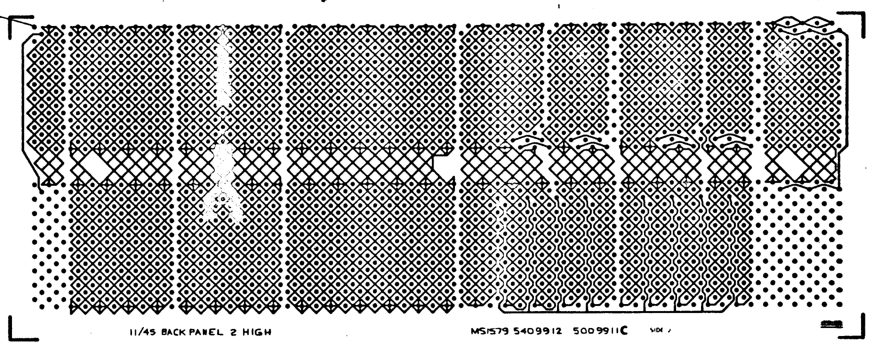
SIZE E CODE CS NUMBER 5409910-0-1 REV. D

CS 5409910-0-1 D

DEC FORM NO. DRE 306

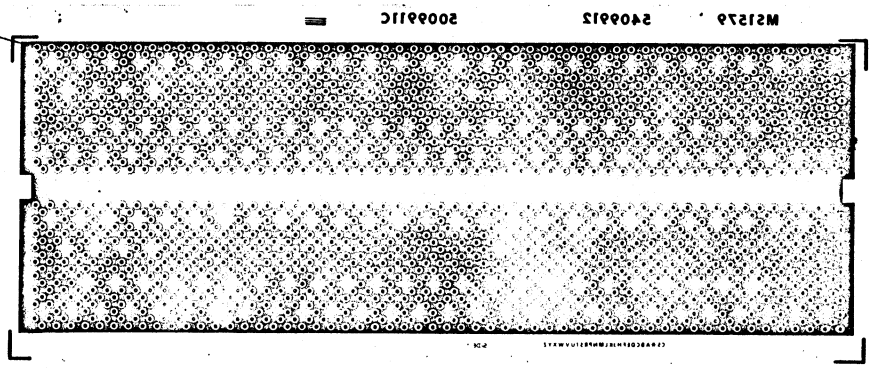
This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

1A1




SOLDER SIDE (SIDE 2)

1A1




BLOCK SIDE (SIDE 1)

| IC TYPE | GND | +5V |
|---|---|---|
| GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE | | |

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

DEC FORM NO. DRE 304

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| REF | | X-Y COORDINATE HOLE LOC | K-CO-5409912-0-5 | 3 |
| REF | | MODULE ECO HISTORY | B-MH-5409912-0-6 | 2 |
| 1 | | ETCHED CIRCUIT BOARD | D-IA-5009911-0-0 | 1 |

PARTS LIST

ETCH BOARD REV C

| REV | CHANGE NO. | ORIGINATED | CHK |
|---|---|---|---|
| A | 5409912-0000H-IA | J. SWANSON | |
| C | | A.J. Hale 6-6-73 | |

REVISIONS

| DEC NO. | EIA NO. | DEC NO. | EIA NO. |
|---|---|---|---|

SEMICONDUCTOR CONVERSION CHART

| | | DATE |
|---|---|---|
| DRN. | K. Sing | 3-21-72 |
| CHK'D | R. Cook | 4/7/72 |
| ENG. | Swanson | 4/7/72 |
| PROJ. ENG. | | 4/10/72 |
| PROD. | | 4/10/72 |

NEXT HIGHER ASSY E-AD-7008753-0-0

SCALE 1 X 1

SHEET 1 OF 1

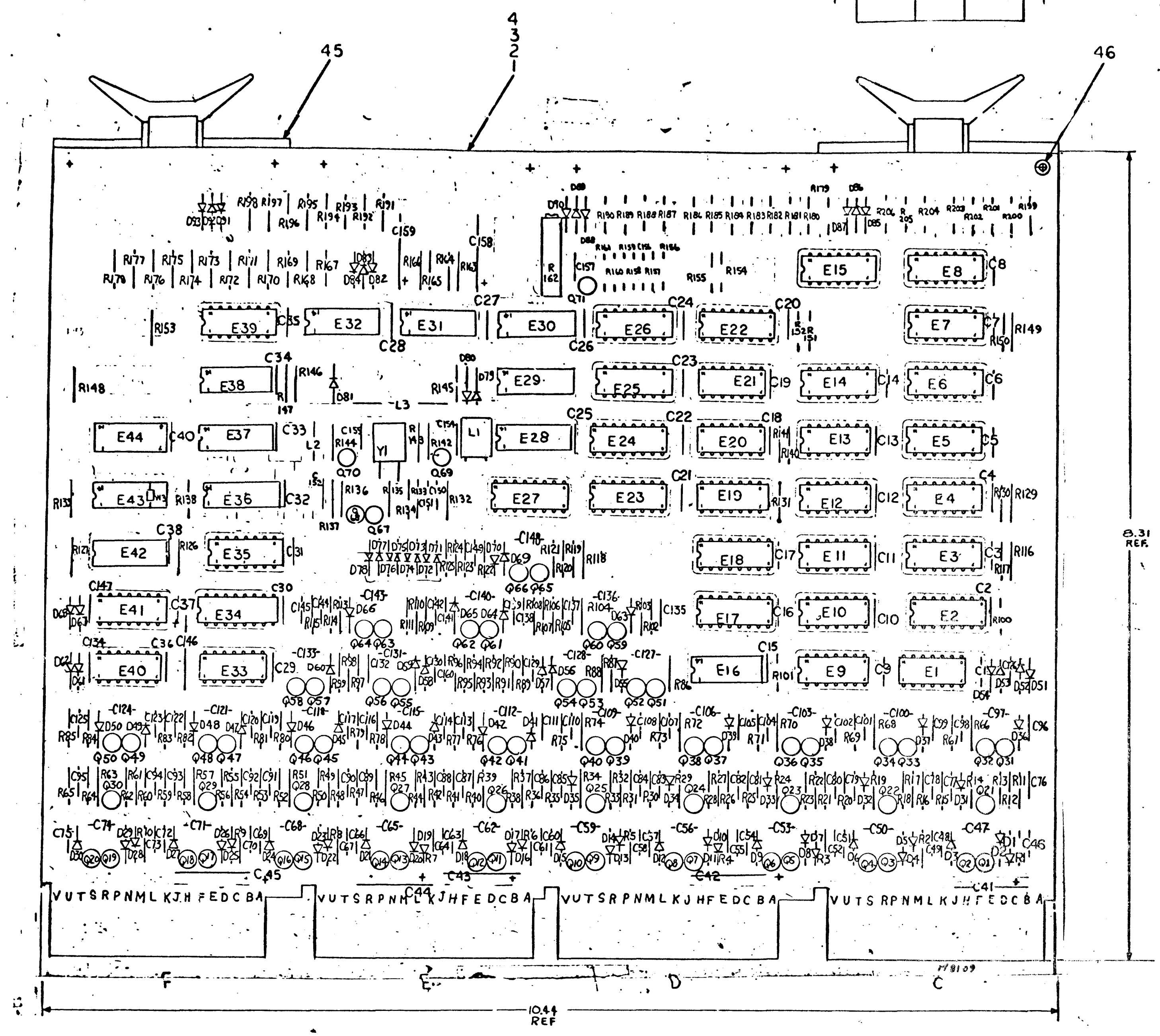
digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE CIRCUIT SCHEMATIC

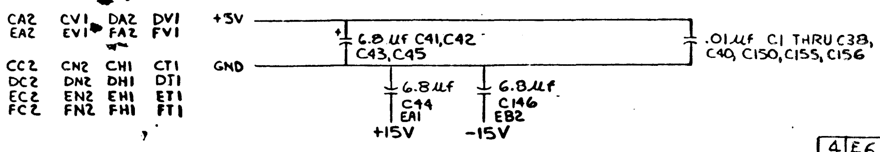
| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| E | CS | 5409912-0-1 | C |

DIST.

E CS 5409912-0-1 C




NOTES:
1. UNLESS OTHERWISE NOTED RESISTANCE IS IN Ω AND CAPACITANCE IS IN PICOFARADS. CAPS WITHOUT VALUE NOTED ARE .22 MFD




## CAUTION
## NON-STANDARD DRAWING FOR SPECIAL APPLICATION

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 35 | Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q15, Q17, Q19, Q21 THRU Q25, Q31 THRU Q40, Q51, Q54, Q56, Q58, Q59, Q63, Q65, Q66, Q69, Q70 | TRANSISTOR DEC 4258 | 1505321 | 40 |
| 36 | Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16, Q18, Q20, Q26 THRU Q30, Q41 THRU Q50, Q52, Q53, Q57, Q60, Q61, Q62, Q64, Q67, Q68, Q71, Q55 | TRANSISTOR DEC 3009 B | 1503100 | 39 |
| 1 | E30 | I.C. DEC 74S140 | 1910546 | 38 |
| 8 | E2, E17, E18, E22, E23, E34, E35, E36 | I.C. DEC 74S112 | 1910545 | 37 |
| 4 | E5, E19, E28, E24 | I.C. DEC 74S74 | 1910544 | 36 |
| 4 | E11, E12, E13, E20 | I.C. DEC 74S65 | 1910543 | 35 |
| 1 | E27 | I.C. DEC 74S64 | 1910542 | 34 |
| 6 | E1, E9, E14, E16, E33, E40 | I.C. DEC 74S40 | 1910541 | 33 |
| 2 | E32, E38 | I.C. DEC 74S20 | 1910539 | 32 |
| 4 | E3, E29, E39, E44 | I.C. DEC 74S11 | 1910537 | 31 |
| 5 | E4 E7 E21 E25 E37 | I.C. DEC 74S04 | 1910534 | 30 |
| 4 | E10, E26, E31, E41 | I.C. DEC 74S00 | 1910532 | 29 |
| 1 | R162 | RES. 1K 3/4W 10% | 1309143-07 | 28 |
| 9 | R117, R130, R151, R140, R147, R150, R157, R163, R166 | RES. 680Ω 1/4W 5% | 1301424 | 27 |
| 1 | R142 | RES. 750Ω 1/4W 5% | 1301401 | 26 |
| 13 | R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R118, R119, R120 | RES. 1.2K 1/4W 5% | 1301320 | 25 |
| 26 | R13, R15, R18, R20, R23, R25, R28, R30, R33, R35, R38, R41, R44, R47, R50, R53, R56, R59, R62, R65, R102, R104, R114, R115, R132, R158 | RES. 10Ω 1/4W 5% | 1301317 | 24 |
| 5 | R12 R17 R22 R27 R32 | RES. 15K 1/4 5% | 1300496 | 23 |
| 22 | R1 THRU R10 R40 R46 R52 R58 R64 R67 R69 R71 R73 R75 R99 R113 | RES. 4.7K 1/4 5% | 1300447 | 22 |
| 7 | R77, R79, R81, R83, R85, R86, R103 | RES. 3K 1/4 5% | 1300432 | 21 |
| 6 | R11, R16, R21, R26, R31, R143 | RES. 1.5K 1/4 5% | 1300391 | 20 |
| 74 | R36, R37, R42, R43, R48, R49, R54, R55, R60, R61, R89 THRU R96, R105 THRU R111, R122, R123, R124, R126, R101 R138 R139 R148 R153 R167 THRU R206 | RES. 1K 1/4 5% | 1300365 | 19 |
| 12 | R116 R129, R141, R146, R149, R156, R152, R159, R160, R161 R164, R165 | RES. 330 1/4W 5% | 1300295 | 18 |
| 2 | R136, R145 | RES. 220 1/4W 5% | 1300271 | 17 |
| 6 | R100, R125, R127, R131, R154, R155 | RES. 150Ω 1/4W 5% | 1300250 | 16 |
| 11 | R14 R19 R24 R29 R34 R39 R45 R51 R57 R63 R121 | RES. 100Ω 1/4W 5% | 1300229 | 15 |
| 2 | R133, R137 | RES. 68Ω 1/4W 5% | 1300219 | 14 |
| 7 | R87, R88, R97 R134, R135, R144, R98 | RES. 47Ω 1/4W 5% | 1300202 | 13 |
| 54 | D1, D3, D4, D6, D7, D9, D10, D12, D13, D15, D16, D18, D19, D21, D22, D24, D25, D27, D28, D30, D31 THRU D54, D57, D58, D61, D62, D64, D67, D68, D69, D65, D70 | DIODE FD777 | 1103041 | 12 |
| 39 | D2, D5, D8, D11, D14, D17, D20, D23, D26, D29, D55, D56, D59, D60, D63, D66, D71 THRU D93 | DIODE D662 | 1100113 | 11 |
| 96 | C46 THRU C97, C99, C100, C160, C102, C103 C105, C106, C108, C109, C111, C112, C114, C115, C117, C118, C120, C121, C128, C129, C126, C127 THRU C145, C147, C148, C149, C151, C152 | CAP .22 uf 50V MONO | 1010274-1 | 10 |
| 8 | C41 THRU C45, C146, C158, C159 | CAP 6.8 uf 35V 10% S.TANT | 1005306 | 9 |
| 42 | C1 THRU C38, C40, C150, C155, C156 | CAP .01 uf 100V 20% DISC | 1001610 | 8 |
| 1 | C154 | CAP 100 PF 100V 5% D.M. | 1000016 | 7 |
| 1 | C157 | CAP 47 PF 100V 5% D.M. | 1000011 | 6 |
| 10 | C98, C101, C104, C107, C110, C113, C116, C119, C122, C125 | CAP 33 PF 100V 5% DM | 1000009 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009799 | 4 |
| REF | | MODULE ECO HISTORY | S-MH-M8109-0-6 | 3 |
| REF | | ASSY/DRILL HOLE LAYOUT | D-AH-M8109-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8109-0-4 | 1 |

PARTS LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 4 | E6, E8, E15, E42 | IC DEC 74S74-45 | 1910950 | 48 |
| 1 | W3 | JUMPER INSULATED | NA | 47 |
| 8 | | EYELET #G64-7 | 9006732 | 46 |
| 4 | | HANDLE FLIP-CHIP MAGENTA | 9008337-06 | 45 |
| 1 | Y1 | CRYSTAL 33.333 MHZ | 1810694-1 | 44 |
| 1 | L2 | INDUCTOR .47 uh NYTRONICS WEE-WEE -0.47 | 1610999 | 43 |
| 1 | L1 | INDUCTOR .22 uh VARIABLE NYTRONICS WEE VL .22 | 1611000 | 42 |
| 1 | L3 | INDUCTOR RFCS 33 uh | 1601759 | 41 |

PARTS LIST

| | | | |
|---|---|---|---|
| DEC 74S112 | 8 | 16 | |
| IC TYPE | GND | +5V | |

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

| ITEM NO. | AWG | FROM PT | TO PT |
|---|---|---|---|

JUMPER LIST

SEMICONDUCTOR CONVERSION CHART

| DEC NO. | EIA NO. |
|---|---|
| DEC 4258 | NONE |
| DEC 3009B | 2N3646 |
| DEC FD777 | 1103041 |
| DEC D662 | 1N645 |

ETCH BOARD REV C

DIGITAL EQUIPMENT CORPORATION

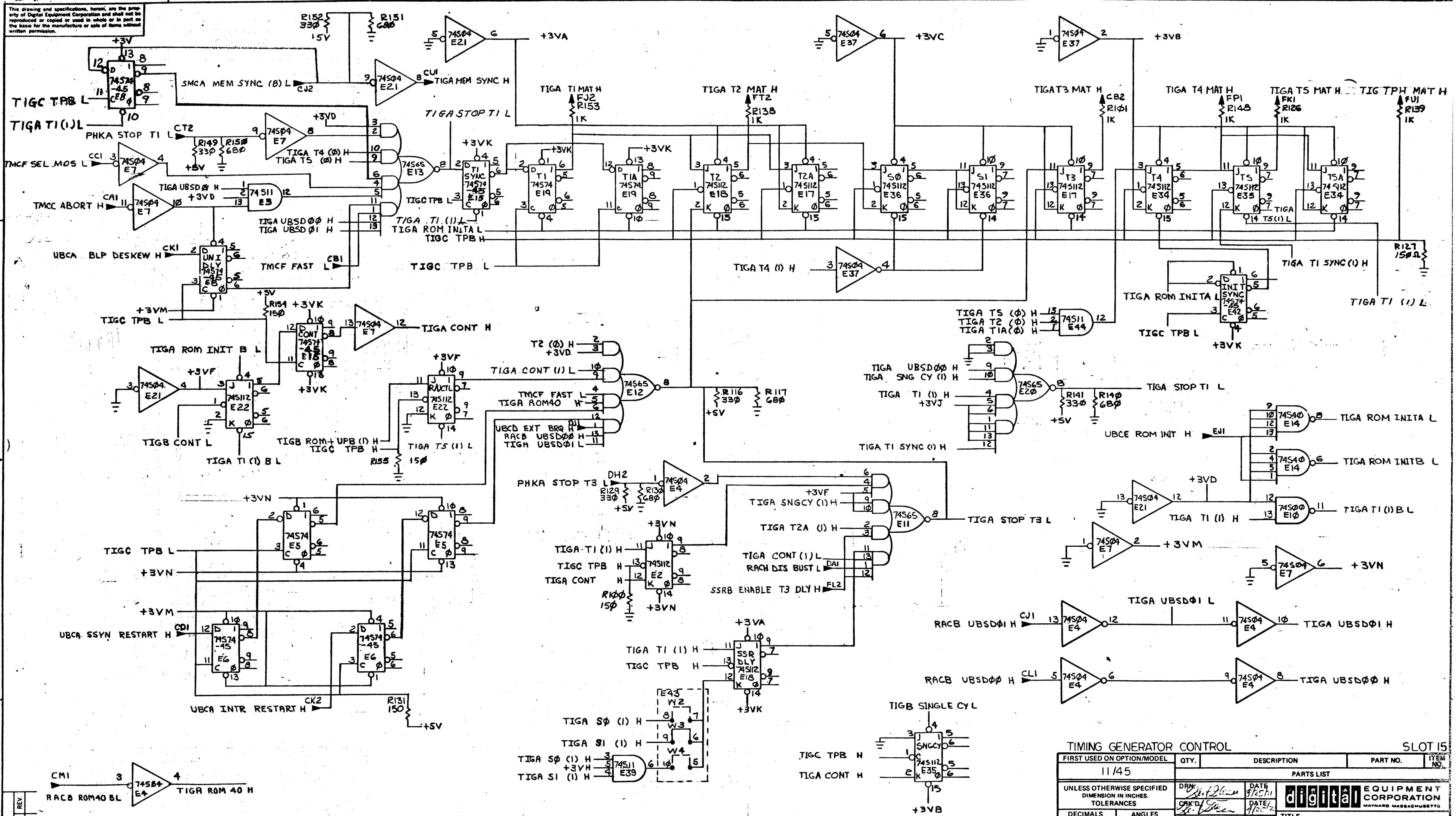
TITLE: TIMING GENERATOR

NEXT HIGHER ASSY: B-DD-KB11-0

SIZE: C CODE: CS NUMBER: M8109-0-1 REV: M3

SCALE 2/1 SHEET 1 OF 6

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




**CAUTION**

**NON-STANDARD DRAWING FOR SPECIAL APPLICATION**

TIMING GENERATOR CONTROL — SLOT 15

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —

FINISH —

DRN. — DATE 4/25/71
CHK'D — DATE 4/25/71
ENG. — DATE 4/17/72
PROJ ENG. — DATE 4-20-72
PROD. — DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

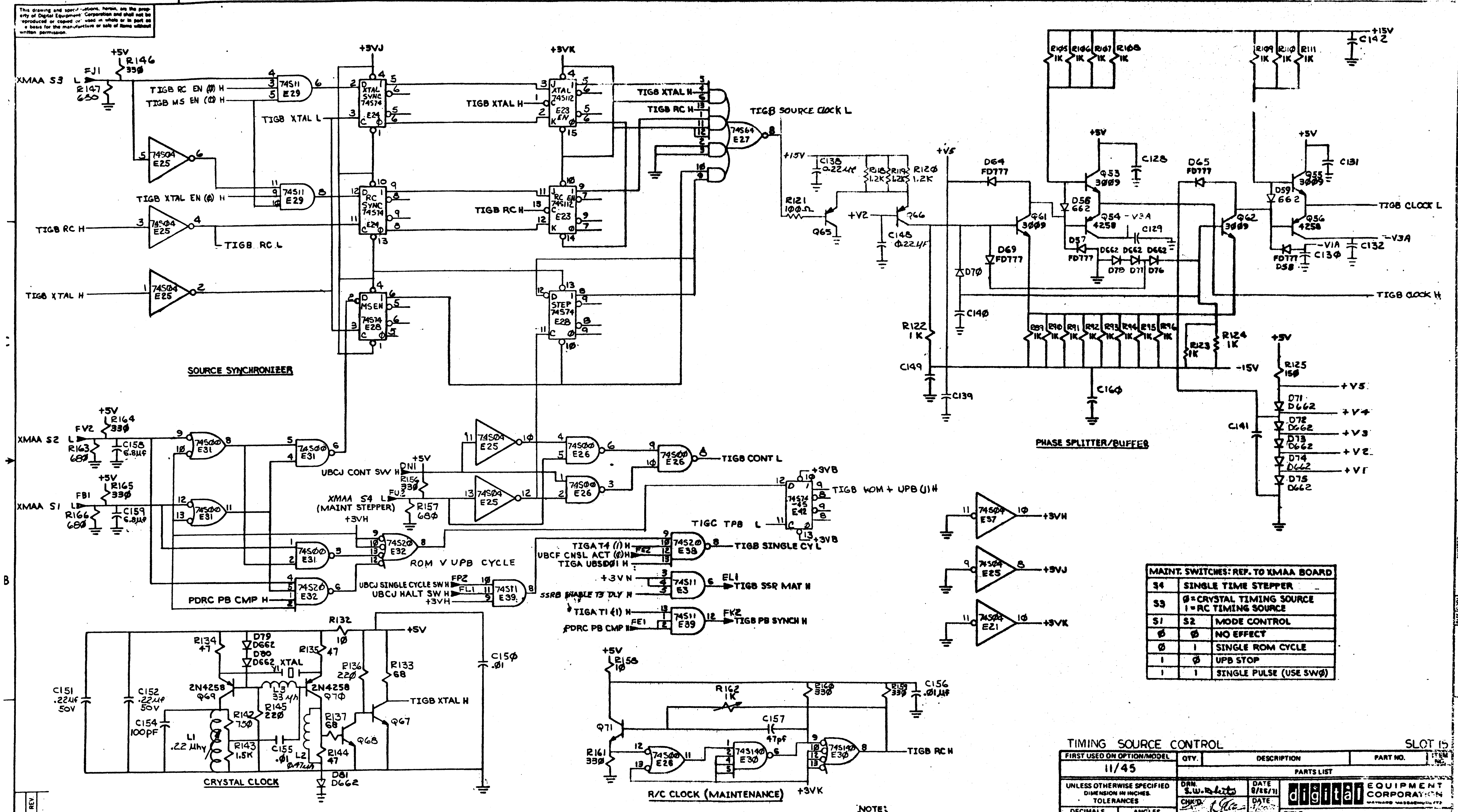
TITLE: TIMING GENERATOR (TIGA)

SIZE D CODE CS NUMBER M8109-Ø-1 REV. M2

SCALE —
SHEET 2 OF 6
DIST.

REVISIONS | REV. | CHANGE NO. | CHK

DEC FORM NO DRD 102-B




| MAINT. SWITCHES: REF. TO XMAA BOARD | | |
|---|---|---|
| S4 | SINGLE TIME STEPPER | |
| S3 | Ø=CRYSTAL TIMING SOURCE<br>1=RC TIMING SOURCE | |
| S1 | S2 | MODE CONTROL |
| Ø | Ø | NO EFFECT |
| Ø | 1 | SINGLE ROM CYCLE |
| 1 | Ø | UPB STOP |
| 1 | 1 | SINGLE PULSE (USE SWØ) |

NOTE:
1. ALL NPN TRANSISTORS ARE DEC 3009B AND ALL PNP. TRANSISTORS ARE DEC 4258 UNLESS OTHERWISE NOTED. ALL DIODES ARE TYPE FD777 ALL CAPS ARE .22 μf 50V MONLYTHIC UNLESS OTHERWISE INDICATED.

TIMING SOURCE CONTROL — SLOT 15

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES — DECIMALS: .XXX ± .005, .XX ± .02, .X ± .1; ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

DRN. S.W. Roberts — DATE 8/26/71

digital EQUIPMENT CORPORATION

TITLE: TIMING GENERATOR (TIGB)

NEXT HIGHER ASSY.: B-DD-KB11-Ø

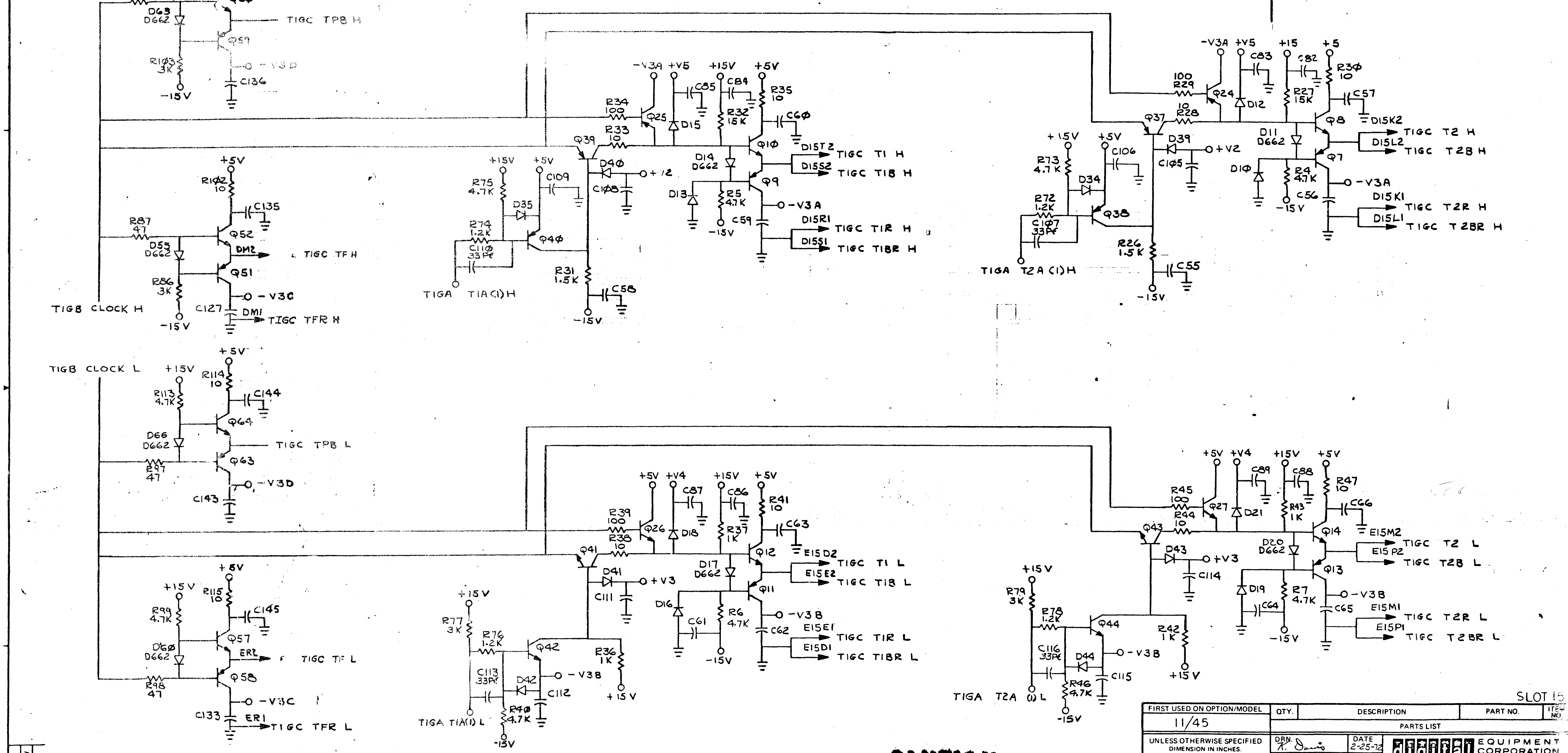
SIZE D — CODE CS — NUMBER M8109-Ø-1 — REV. M2

SHEET 3 OF 6

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

NOTES:

1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258, ALL DIODES ARE TYPE FD 777, ALL CAPACITORS ARE .22 μF 50V MONOLYTHIC UNLESS OTHERWISE INDICATED.




CAUTION
NON-STANDARD DRAWING
FOR SPECIAL APPLICATION

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005<br>.XX = .02<br>.X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—

FINISH —/—

| | | DATE |
|---|---|---|
| DRN. | R. Davis | 2-25-72 |
| CHK'D. | [illegible] | 4/-/- |
| ENG. | K.V. [illegible] | 4/20/72 |
| PROJ. ENG. | [illegible] | 4-20-72 |
| PROD. | [illegible] | 4-21-72 |

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —/—  SHEET 4 OF 6

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

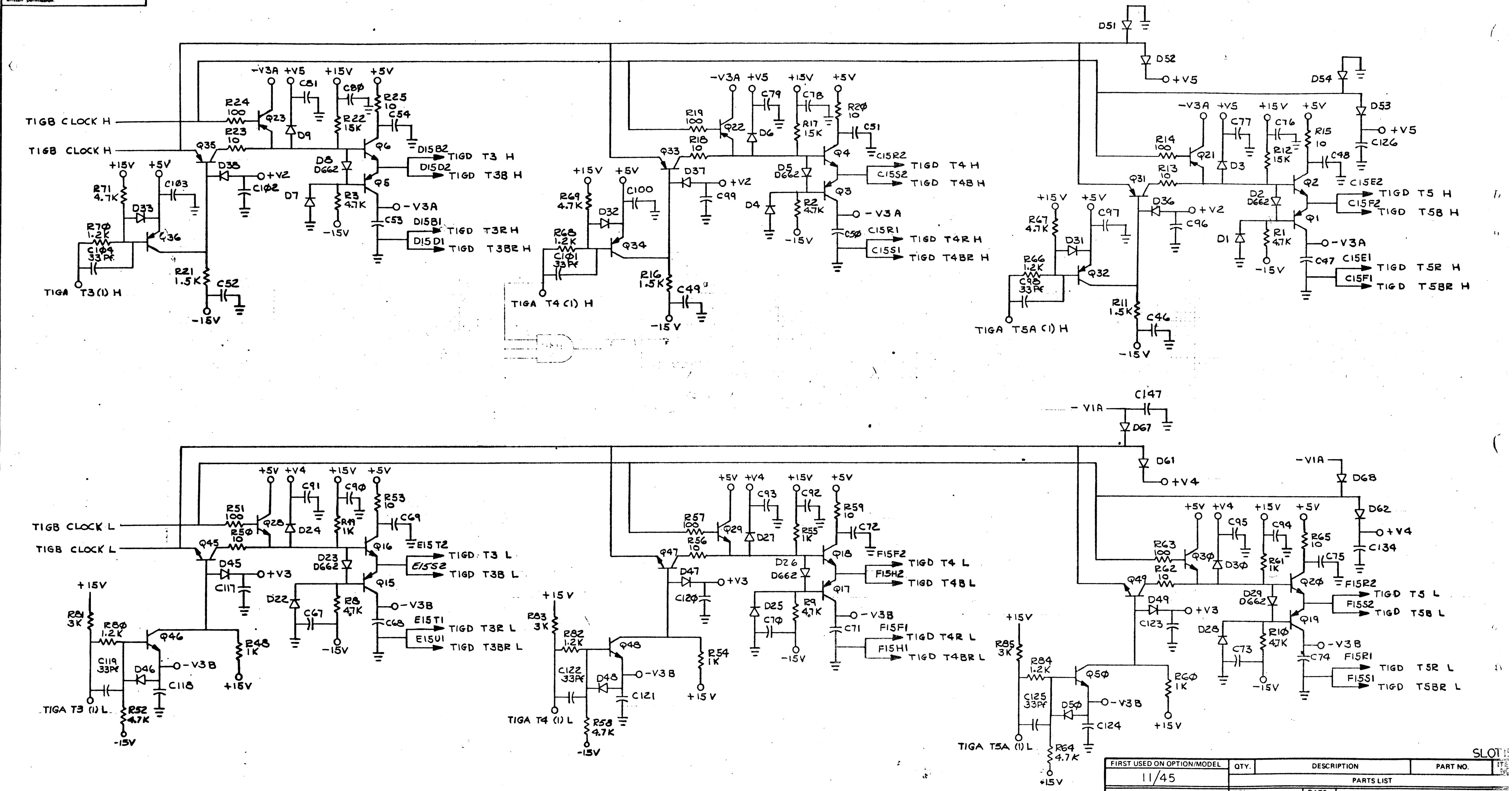
TITLE TIMING GENERATOR (TIGC)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8109-Ø-1 | M2 |

REVISIONS: REV / CHANGE NO / CHK

DEC FORM NO DRD 102-B

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




NOTE:

1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258, ALL DIODES ARE TYPE FD777 ALL CAPACITORS ARE .22 µf MONOLYTHIC UNLESS OTHERWISE INDICATED.

**— CAUTION —**

**NON-STANDARD DRAWING**

**FOR SPECIAL APPLICATION**

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. |
|---|---|---|---|
| 11/45 | | PARTS LIST | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX ± .005<br>.XX ± .02<br>.X ± .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —/—/—

FINISH —/—/—

| | | DATE |
|---|---|---|
| DRN | R. Davis | 3-1-72 |
| CHK'D | | 4/20/72 |
| ENG. | | 4/20/72 |
| PROJ. ENG. | | 4-20-72 |
| PROD. | | 4-21-72 |

DIGITAL EQUIPMENT CORPORATION, MAYNARD MASSACHUSETTS

TITLE: TIMING GENERATOR (TIGD)

NEXT HIGHER ASSY. B-DD-KB11-Ø

SIZE D CODE CS NUMBER M8109-Ø-1 REV M

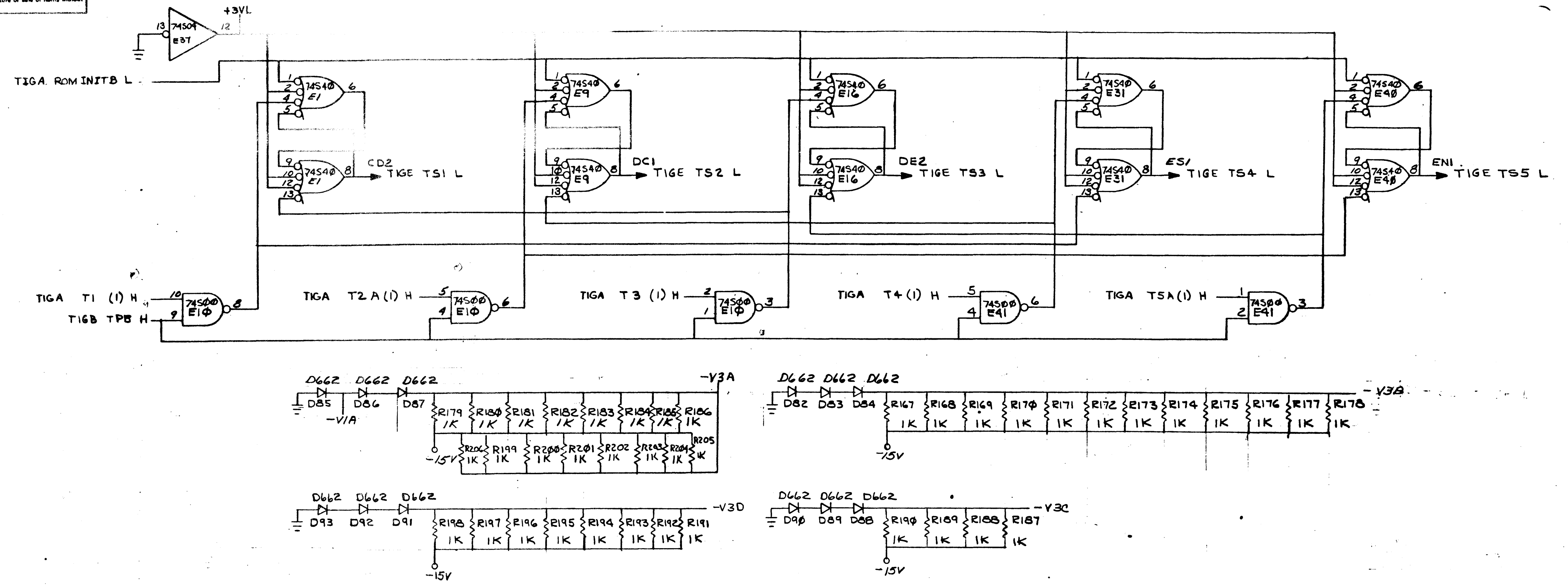
SCALE —/— SHEET 5 OF 6

SLOT

DEC FORM NO DRD 102-B

BRUNING 40-521 15840

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




**CAUTION**
**NON-STANDARD DRAWING**
**FOR SPECIAL APPLICATION**

TIMING STATE DRIVERS — SLOT 16

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. |
|---|---|---|---|
| 11/45 | | PARTS LIST | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX = .005 .XX = .02 .X = .1 | ± 0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

| | Signature | DATE |
|---|---|---|
| DRN | F. Carberry | 8-25-71 |
| CHKD | [illegible] | 4/20/72 |
| ENG | [illegible] | 4/20/72 |
| PROJ. ENG. | [illegible] | 4-20-72 |
| PROD. | [illegible] | 4-21-72 |

NEXT HIGHER ASSY. B-DD-KB11-Ø

SCALE —//—  SHEET 6 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE TIMING GENERATOR (TIGE)

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8109-Ø-1 | M2 |

REVISIONS: REV. / CHANGE NO. / CHK

DEC FORM NO DRD 102-B

ECO No. KB11A-00021 Sheet 2 of 8

[redacted] EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

# DRAWING DIRECTORY

## CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

| SEQUENCE | | |
|---|---|---|
| DRAWING DIRECTORY | B-DD-KB11-Ø | (SHEET ONE ONLY) |
| MODULE UTILIZATION | E-MU-KB11-A-1 | |
| BLOCK DIAGRAM | D-BD-KB11-A-Ø2 | |
| KB11-A FLOW DIAGRAMS | D-FD-KB11-A-Ø3 | |
| DATA PATHS (DAP) | E-CS-M81ØØ-Ø-1 | |
| GENERAL REGS & ALU CNTL(GRA) | E-CS-M81Ø1-Ø-1 | |
| IR DECODE & COND CODES(IRC) | E-CS-M81Ø2-Ø-1 | |
| PROC DATA & UNIBUS REG(PDR) | E-CS-M81Ø4-Ø-1 | |
| ROM & ROM CONTROL(RAC) | E-CS-M81Ø3-Ø-1 | |
| SYSTEM JUMPER BOARD(SJB) | E-CS-M8116-Ø-1 | |
| TIMING GENERATOR(TIG) | E-CS-M81Ø9-Ø-1 | |
| TRAP & MISC CNTL(TMC) | E-CS-M81Ø5-Ø-1 | |
| UNIBUS & CONSOLE CNTL (UBC) | E-CS-M81Ø6-Ø-1 | |
| BUS CABLES & GRANT CHAIN | D-IC-KB11-A-BG | |
| CIRCUIT SCHEMATIC | C-CS-M93Ø-Ø-1 | |
| CIRCUIT SCHEMATIC | C-CS-M92Ø-Ø-1 | |
| CIRCUIT SCHEMATIC | E-CS-5409910-0-1 | |
| CIRCUIT SCHEMATIC | E-CS-5409912-0-1 | |
| **CIRCUIT SCHEMATIC(TIG) SPECIAL REVISION** | **E-CS-M81Ø9-0-1** | |

SEQUENCE

## UNIT VARIATIONS

| VARIATION | TITLE | PRINT SET TYPE: KB11-1 |
|---|---|---|
| KB11-A | 16 BIT PROCESSOR | X |

| REVISIONS | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REV | A | B | C | D | E | F | H | J | K | L | M | N | P | R | S | T | U |
| CHG. NO. | 7008871-00002 | 7008871-00003 | KB11A-6 | KB11A-7 | KB11A-8 | KB11A-9 | KB11A-11 | KB11A-12A | KB11A-13 | KB11A-14 | KB11A-15 | KB11A-16 | KB11A-17 | KB11A-18 | KB11A-19 | KB11A-20 | KB11A-21 |
| DATE | 5/72 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 1/73 | 3/73 | 5/73 | 5/73 | 8/73 | 12/73 | 3-74 | 6-74 |

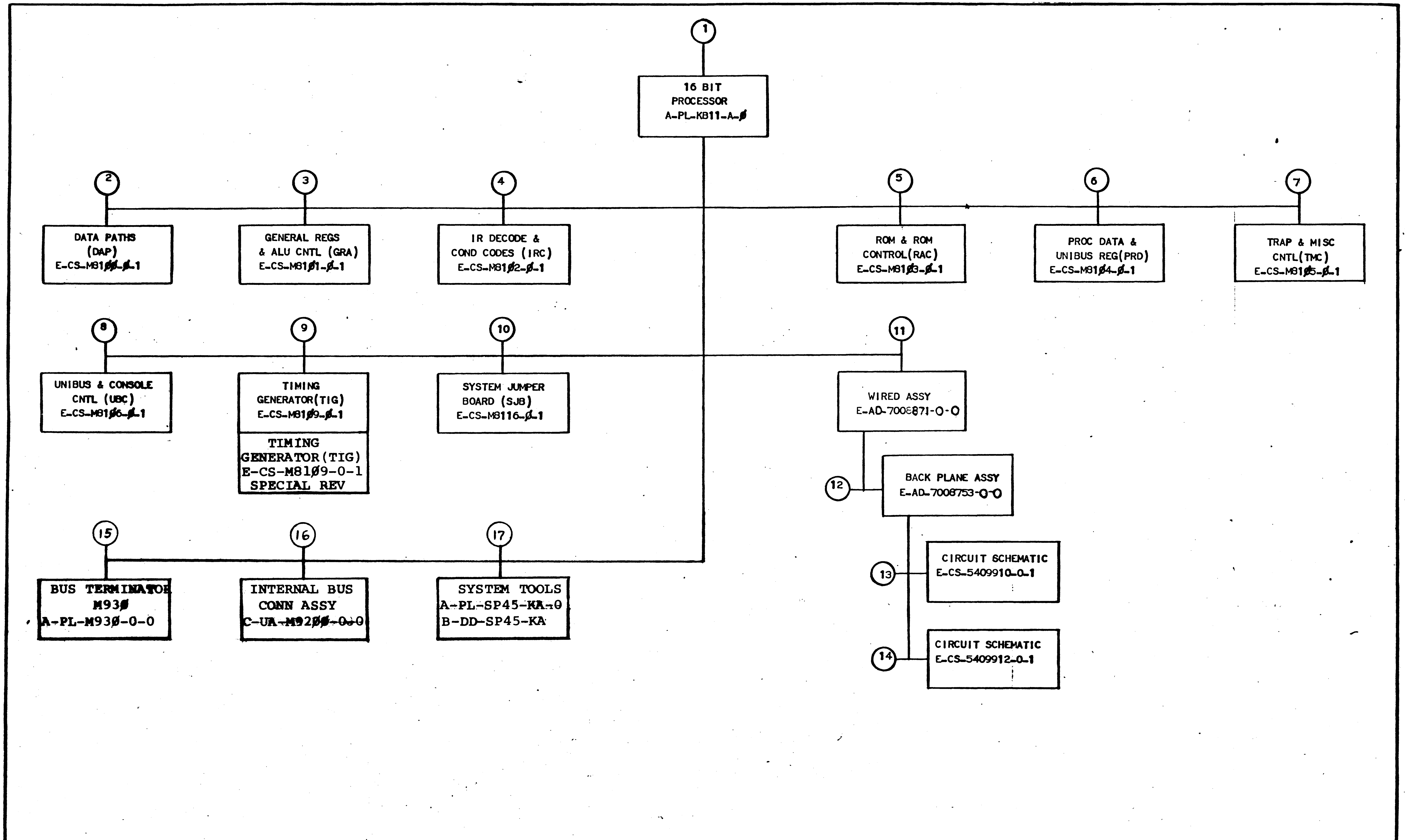
| USED ON OPTION/MODEL | |
|---|---|
| 11/45 | |

| | | |
|---|---|---|
| DRN. R. COOK | DATE 3/30/72 | TITLE 16 BIT PROCESSOR |
| CHK'D. R.COOK | DATE 3/30/72 | |
| PROJ ENG. [signature] | DATE 4/28/72 | |
| PROD. [signature] | DATE 5-1-72 | SIZE B · CODE DD · NUMBER KB11-Ø · REV U |
| FIELD SERV. [signature] | DATE 5/1/72 | |
| SHEET 1 OF 5 | | DIST |

DRB 106

DEC 16-(325)-1062-1-N871

ECO No. KB11A-00021 Sheet 3 of 8




| TITLE | | SIZE | CODE | NUMBER | REV |
|---|---|---|---|---|---|
| 16 BIT PROCESSOR | SHEET 2 OF 5 | B | DD | KB11-0 | U |

| CUSTOMER PRINT SET | MFG. SET | FIND NO. | DRAWING NO. | REV | NO OF SHT | DESCRIPTION (ELECTRICAL) | OPTION NO. |
|---|---|---|---|---|---|---|---|
| | | 1 | A-PL-KB11-A-Ø | | 1 | 16 BIT PROCESSOR | |
| X | | | E-MU-KB11-A-1 | A | 1 | MODULE UTILIZATION | |
| X | | | D-BD-KB11-A-Ø2 | | 2 | BLOCK DIAGRAM | |
| X | | | D-FD-KB11-A-Ø3 | A | 15 | KB11-A FLOW DIAGRAMS | |
| X | | | D-IC-KB11-A-BG | | 1 | BUS CABLES AND GRANT CHAIN | |
| X | | 2 | E-CS-M81ØØ-Ø-1 | # | 9 | DATA PATHS (DAP) | |
| | | | K-CO-M81ØØ-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81ØØ-Ø-5 | | 1 | ASSY/SRILLING HOLE LAYOUT | |
| | | | B-MH-M81ØØ-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 3 | E-CS-M81Ø1-Ø-1 | # | 10 | GENERAL REGS E ALU CNTL(GRA) | |
| | | | K-CO-M81Ø1-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø1-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø1-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 4 | E-CS-M81Ø2-Ø-1 | # | 8 | IR DECODE & COND CODES(IRC) | |
| | | | K-CO-M81Ø2-Ø-4 | | 1 | X-Y CO-OORDINATE HOLE LOC | |
| | | | E-AH-M81Ø2-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø2-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 5 | E-CS-M81Ø3-Ø-1 | # | 15 | ROM & ROM CONTROL (RAC) | |
| | | | K-CO-M81Ø3-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø3-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø3-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 6 | E-CS-M81Ø4-Ø-1 | # | 8 | PROC DATA & UNIBUS REG(PRD) | |
| | | | K-CO-M81Ø4-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø4-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø4-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 7 | E-CS-M81Ø5-Ø-1 | # | 7 | TRAP & MISC CNTL(TMC) | |
| | | | K-CO-M81Ø5-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø5-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø5-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 8 | C-CS-M81Ø6-Ø-1 | # | 9 | UNIBUS & CONSOLE CNTL(URC) | |
| | | 1 | K-CO-M81Ø6-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | 1 | E-AH-M81Ø6-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø6-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | 9 | E-CS-M81Ø9-Ø-1 | # | 6 | TIMING GENERATOR (TIG) | |
| | | | K-CO-M81Ø9-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø9-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø9-Ø-6 | | 1 | MODULE ECO HISTORY | |
| X | | | E-CS-M81Ø9-0-1 | M# | 6 | TIMING GENERATOR(TIG)"C" ETCH ONLY | |
| X | | 10 | E-CS-M8116-Ø-1 | # | 3 | SYSTEM JUMPER BOARD (SJB) | |
| | | | K-CO-M8116-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M8116-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M8116-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | 11 | E-AD-7008871-0-0 | D | 1 | WIRED ASSY | |
| | | | K-WL-KB11-A-4 | N | 1 | WIRE LIST | |
| | | 12 | E-AD-7008753-0-0 | | 1 | BACK PLANE ASSY | |
| X | | 13 | E-CS-5409910-0-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-5409910-0-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | B-MH-5409910-0-6 | | 1 | MODULE ECO HISTORY | |
| X | | 14 | E-CS-5409912-0-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-5409912-0-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | B-MH-5409912-0-6 | | 1 | MODULE ECO HISTORY | |

| TITLE | SHEET | SIZE | CODE | NUMBER | REV |
|---|---|---|---|---|---|
| 16 BIT PROCESSOR | 3 OF 5 | B | DD | KB11-Ø | U |

**ELECTRICAL**

| CUSTOMER PRINT SET K-B11-1 | MFG. SET | FIND NO. | DRAWING NO. | REV | NO OF SHT | DESCRIPTION | OPTION NO. |
|---|---|---|---|---|---|---|---|
| | | 15. | A-PL-M93Ø-Ø-Ø | | 1 | BUS TERMINATOR M93Ø | |
| X | | | C-CS-M93Ø-Ø-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-M93Ø-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | D-AH-M93Ø-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M93Ø-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | 16. | C-UA-M92ØØ-Ø-Ø | | 1 | INTERNAL BUS CONN ASSY | |
| X | | | C-CS-M92Ø-Ø-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-M92Ø-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | D-AH-M92Ø-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M92Ø-Ø-6 | | 1 | MODULE ECO HISTORY | |

**MECHANICAL**

| CUSTOMER PRINT SET KB11-1 | MFG SET | FIND NO. | DRAWING NO. | REV | NO OF SHT | DESCRIPTION | OPTION NO. |
|---|---|---|---|---|---|---|---|
| | | 1. | A-PL-KB11-A-Ø | | 1 | 16 BIT PROCESSOR | |
| | | 2. | E-CS-M81ØØ-Ø-1 | # | 9 | DATA PATHS (DAP) | |
| | | | K-CO-M81ØØ-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81ØØ-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81ØØ-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE,MODULE | |
| | | 3. | E-CS-M81Ø1-Ø-1 | # | 10 | GENERAL REGS & ALU CNTL(GRA) | |
| | | | K-CO-M81Ø1-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø1-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø1-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 4. | E-CS-M81Ø2-Ø-1 | # | 8 | IR DECODE & COND CODES(IRC) | |
| | | | K-CO-M81Ø2-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LAYOUT | |
| | | | E-AH-M81Ø3-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø3-Ø-6 | | 1 | MODULE,ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 5. | E-CS-M81Ø3-Ø-1 | # | 15 | ROM & ROM CONTROL(RAC) | |
| | | | K-CO-M81Ø3-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø3-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø3-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 6. | E-CS-M81Ø4-Ø-1 | # | 8 | PROC DATA & UNIBUS REG(PRD) | |
| | | | K-CO-M81Ø4-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø4-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø4-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 7. | E-CS-M81Ø5-Ø -1 | # | 7 | TRAP & MISC CNTL(TMC) | |
| | | | K-CO-M81Ø5-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø5-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø5-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |

| TITLE | SHEET | SIZE | CODE | NUMBER | REV |
|---|---|---|---|---|---|
| 16 BIT PROCESSOR | SHEET 4 OF 5 | B | DD | KB11-0 | U |

ECO No. KB11A- 00021 Sheet 6 of 8

| KB11-1 | MFG. SET | FIND NO. | DRAWING NO. | REV | NO OF SHT | DESCRIPTION | OPTION NO. |
|---|---|---|---|---|---|---|---|
| | | 8. | E-CS-M81Ø6-Ø-1 | # | 9 | UNIBUS & CONSOLE CNTL(UBC) | |
| | | | K-CO-M81Ø6-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø6-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø6-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 9. | E-CS-M8109-0-1 | # | 6 | TIMING GENERATOR(TIG) | |
| | | | K-CO-M81Ø9-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M81Ø9-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M81Ø9-Ø-5 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | | E-CS-M81Ø9-0-1 | # | 6 | TIMING GENERATOR(TIG) "C" ETCH ONLY | |
| | | 10. | E-CS-M8116-Ø-1 | # | 3 | SYSTEM JUMPER BOARD(SJB) | |
| | | | K-CO-M8116-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | E-AH-M8116-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M8116-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-PS-1210711-0-0 | | 2 | HANDLE, MODULE | |
| | | 11. | E-AD-7008871-0-0 | D | 1 | WIRED ASSY | |
| | | | D-IA-7409676-0-0 | | 1 | SUPPORT, CONN | |
| | | | C-PS-1210698-0-0 | | 1 | CENTER CARD GUIDE | |
| | | 12. | E-AS-7008753-0-0 | | 1 | BACK PLANE ASSY | |
| | | | D-MD-7410882-0-0 | | 1 | SUPPORT, LOGIC | |
| | | | E-PS-1210258-0-0 | | 1 | 288 PIN BLOCK TYPE H863 | |
| | | | C-MD-7409261-0-0 | | 1 | BAR, LOGIC SUPPORT | |
| | | | D-MD-5009936-0-0 | | 1 | SHEET, PROTECTION | |
| | | 13. | E-CS-5409910-0-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-5409910-0-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | B-MH-5409910-0-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-IA-5009909-0-0 | | 1 | ETCH BOARD | |
| | | 14. | E-CS-5409912-0-1 | # | 1 | CIRCUIT SCHEMATIC | |
| | | | K-CO-5409912-0-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | B-MH-5409912-0-6 | | 1 | MODULE ECO HISTORY | |
| | | | E-IS-5009911-0-0 | | 1 | ETCH BOARD | |

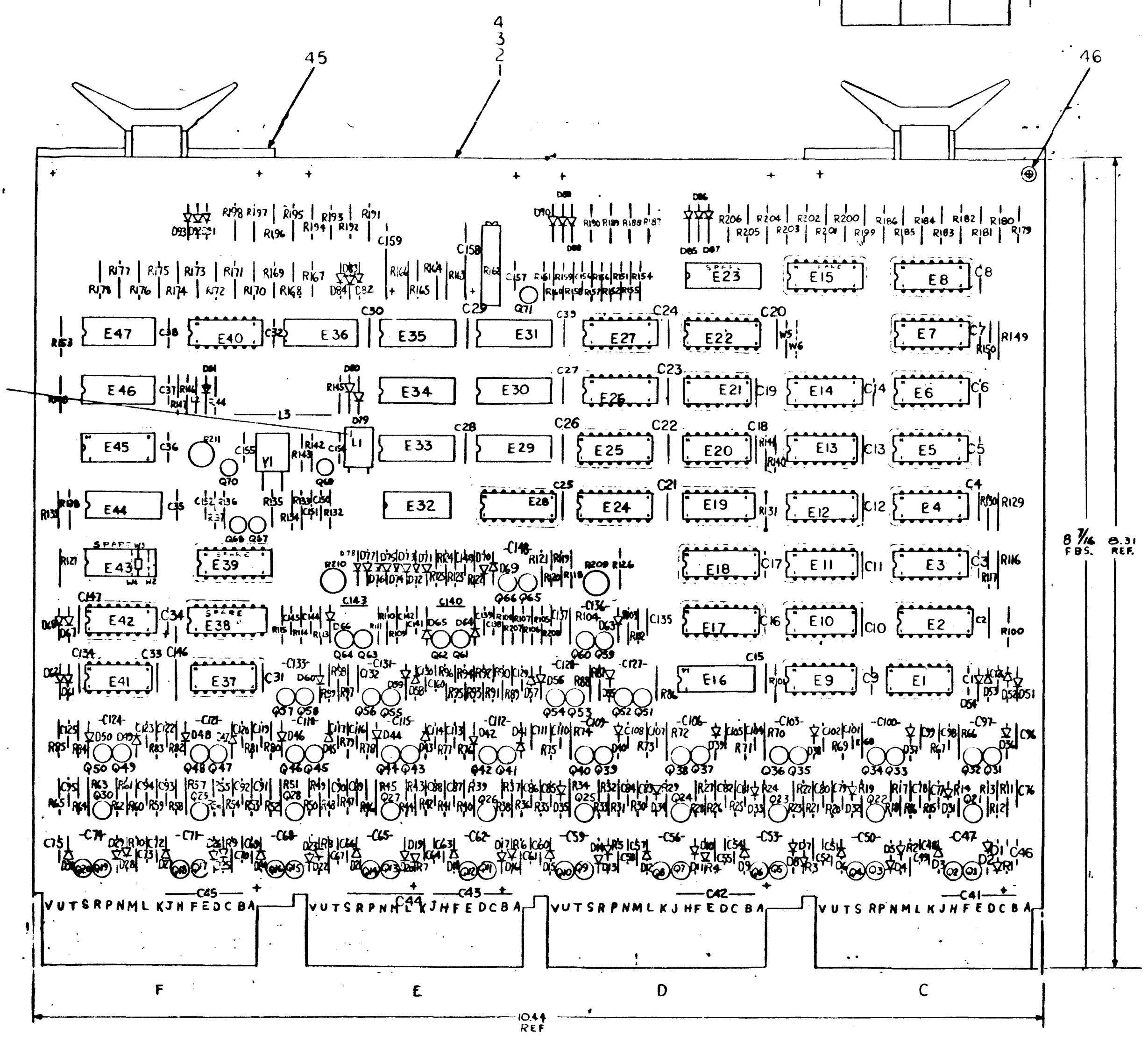
| KB11-1 | MFG. SET | FIND NO. | DRAWING NO. | REV | NO OF SHT | DESCRIPTION | OPTION NO. |
|---|---|---|---|---|---|---|---|
| | | 15. | A-PL-M93Ø-Ø-Ø | | 1 | BUS TERMINATOR | |
| | | | K-CO-M93Ø-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | D-AH-M93Ø-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M93Ø-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | 16. | C-UA-M92ØØ-Ø-Ø | | 1 | INTERNAL BUS CONN ASSY | |
| | | | K-CO-M92Ø-Ø-4 | | 1 | X-Y CO-ORDINATE HOLE LOC | |
| | | | D-AH-M92Ø-Ø-5 | | 1 | ASSY/DRILLING HOLE LAYOUT | |
| | | | B-MH-M92Ø-Ø-6 | | 1 | MODULE ECO HISTORY | |
| | | | A-DC-7407806-0-0 | | 1 | DEC UNIBUS DECAL | |
| | | | D-IA-5008647-0-0 | | 1 | INTERNAL BUS CONN ETCH BOARD | |
| | | | B-MD-7409670-0-0 | | 1 | HANDLE, BUS MODULE REWORK | |

| TITLE | SHEET | SIZE | CODE | NUMBER | REV |
|---|---|---|---|---|---|
| 16 BIT PROCESSOR | 5 OF 5 | B | DD | KB11-Ø | U |

DRB 108

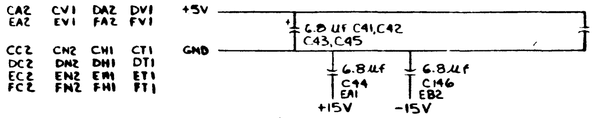
DEC-16-(325)-1062-2A-R272

ECO No. M8109-0016 Sheet 3 of 14



NOTES:

1. UNLESS OTHERWISE NOTED: RESISTANCE IS IN Ω, CAPACITANCE IS IN PICOFARADS. CAPS WITHOUT VALUE NOTED ARE .22 MFD 50V. DIODES ARE TYPE FD777 & ALL NPN TRANSISTORS ARE DEC 3009B & PNP TRANSISTORS ARE DEC 4258.
2. BOND L1 TO ETCHED BOARD




PARTS LIST

| QTY | REF DESIGNATION | DESCRIPTION | PART NO. | ITEM NO |
|---|---|---|---|---|
| 2 | R209, R210 | POT. 2K 1/2 W | 13-09150-07 | 51 |
| 1 | R211 | POT. 100 1/2 W | 13-09150-05 | 50 |
| 1 | R136 | RES. 120 1/4 W 5% | 13-00247 | 49 |
| | | | | 48 |
| 2 | W3, W5 | JUMPER INSULATED | 9009185 | 47 |
| 8 | | EYELET #GS4-7 | 1006732 | 46 |
| 4 | | HANDLE FLIP-CHIP MAGENTA | 9008337-06 | 45 |
| 1 | Y1 | CRYSTAL 33.333 MHZ | 1810694-1 | 44 |
| 1 | L2 | INDUCTOR .47 µh NYTRONICS WEE-WEE -0.47 | 1610999 | 43 |
| 1 | L1 | INDUCTOR .22 µh VARIABLE NYTRONICS WEE VL .22 | 1611000 | 42 |
| 1 | L3 | INDUCTOR RFCS 33 µh | 1601759 | 41 |
| 35 | Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q15, Q17, Q19, Q21, THRU Q25, Q31 THRU Q40, Q51, Q54, Q56, Q58, Q69, Q63, Q65, Q66, Q[illegible], Q70 | TRANSISTOR DEC 4258 | 1505321 | 40 |
| 36 | Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16, Q18, Q20, Q26 THRU Q30, Q41 THRU Q50, Q52, Q53, Q57, Q60, Q61, Q62, Q64, Q67, Q68, Q71, Q55 | TRANSISTOR DEC 3009 B | 1503100 | 39 |
| 1 | E35 | IC DEC 74S40 | [illegible]10546 | 38 |
| 8 | E2, E17, E18, E22, E24, E25, E28, E44 | I.C. DEC 74S112 | [illegible]10545 | 37 |
| 8 | E5, E8, E9, E29, E33, E6, E26, E27 | IC. DEC 74S74 | 1910544 | 36 |
| 4 | E11, E12, E13, E20 | IC DEC 74S65 | 1910543 | 35 |
| 1 | E32 | IC DEC 74S64 | 1910542 | 34 |
| [illegible] | E1, E3, E14, E16, E37, E41 | IC. DEC 74S40 | 1910541 | 33 |
| 2 | E40, E46 | IC. DEC 74S20 | 1910539 | 32 |
| 3 | E3, E34, E47 | IC. DEC 74S11 | 1910537 | 31 |
| 5 | E4, E7, E21, E30, E45 | I.C. DEC 74S04 | 1910534 | 30 |
| 4 | E10, E31, E36, E42 | IC DEC 74S00 | 1910532 | 29 |
| 1 | R162 | POT 1K 3/4W 10% | 1309143-07 | 28 |
| 9 | R117, R130, R151, R140, R47, R150, R157, R163, R166 | RES 680 1/4W 5% | 1301424 | 27 |
| 1 | R142 | RES. 750 1/4W 5% | 1301401 | 26 |
| 13 | R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R118, R119, R120 | RES. 1.2K 1/4W 5% | 1301320 | 25 |
| 26 | R3, R15, R18, R20, R23, R25, R28, R30, R33, R35, R38, R41, R44, R47, R50, R53, R56, R59, R62, R65, R102, R104, R114, R115, R132, R158 | RES. 10 1/4W 5% | 1301317 | 24 |
| 5 | R12, R17, R22, R27, R32 | RES. 15K 1/4 5% | 1300496 | 23 |
| 22 | R1 THRU R10, R40, R46, R52, R58, R64, R67, R69, R71, R73, R75, R99, R113 | RES. 4.7K 1/4 5% | 1300447 | 22 |
| 7 | R77, R79, R81, R83, R85, R86, R103 | RES. 3K 1/4 5% | 1300432 | 21 |
| 6 | R11, R16, R21, R26, R31, R143 | RES. 1.5K 1/4 5% | 1300391 | 20 |
| 76 | R36, R37, R42, R43, R48, R49, R54, R55, R60, R61, R89 THRU R96, R105 THRU R111, R122, R123, R124, R126, R101, R138, R139, R148, R153, R167 THRU R208 | RES. 1K 1/4 5% | 1300365 | 19 |
| 12 | R116, R129, R141, R146, R149, R156, R152, R159, R160, R161, R164, R165 | RES. 330 1/4W 5% | 1300295 | 18 |
| 1 | R145 | RES. 220 1/4W 5% | 1300271 | 17 |
| 6 | R100, R125, R127, R131, R154, R155 | RES. 150 1/4W 5% | 1300250 | 16 |
| 11 | R14, R19, R24, R29, R34, R39, R45, R51, R57, R63, R121 | RES. 100 1/4W 5% | 1300229 | 15 |
| 2 | R133, R137 | RES. 68 1/4W 5% | 1300219 | 14 |
| 7 | R87, R88, R97, R134, R135, R144, R98 | RES. 47 1/4W 5% | 1300202 | 13 |
| 54 | D1, D3, D4, D6, D7, D9, D10, D12, D13, D15, D16, D18, D19, D21, D22, D24, D25, D27, D28, D30, D31 THRU D54, D57, D58, D61, D62, D64, D67, D68, D69, D65, D70 | DIODE FD777 | 1103041 | 12 |
| 39 | D2, D5, D8, D11, D14, D17, D20, D23, D26, D29, D55, D56, D59, D60, D63, D66, D71 THRU D93 | DIODE D662 | 1100113 | 11 |
| 96 | C46 THRU C97, C99, C100, C160, C102, C103, C105, C106, C108, C109, C111, C112, C114, C115, C117, C118, C120, C121, C123, C124, C126, C127 THRU C145, C147, C148, C149, C151, C152 | CAP .22 µF 50V MONO. | 1010274-1 | 10 |
| 8 | C41 THRU C45, C146, C158, C159 | CAP 6.8 µf 35V 10% S.TANT | 1005306 | 9 |
| 42 | C1 THRU C39, C150, C155, C156 | CAP .01 µf 100V 20% DISC | 1001610 | 8 |
| 1 | C154 | CAP 100 PF 100V 5% DM. | 1000016 | 7 |
| 1 | C157 | CAP 47 PF 100V 5% DM | 1000011 | 6 |
| 10 | C98, C101, C104, C107, C110, C113, C116, C119, C122, C125 | CAP 33 PF 100V 5% DM | 1000009 | 5 |
| 1 | | ETCHED CIRCUIT BOARD | 5009799 | 4 |
| REF | | MODULE ECO HISTORY | [illegible] | 3 |
| REF | | ASSY/DRILL HOLE LAYOUT | D-AH-M8109-0-5 | 2 |
| REF | | X-Y COORDINATE HOLE LOCATION | K-CO-M8109-0-4 | 1 |

ETCH BOARD REV F

SEMICONDUCTOR CONVERSION CHART

| DEC NO | EIA NO |
|---|---|
| DEC 4258 | NONE |
| DEC 3009B | 2N3646 |
| DEC FD777 | 1N3041 |
| DEC D662 | 1N645 |

NEXT HIGHER ASSY: B-[illegible]

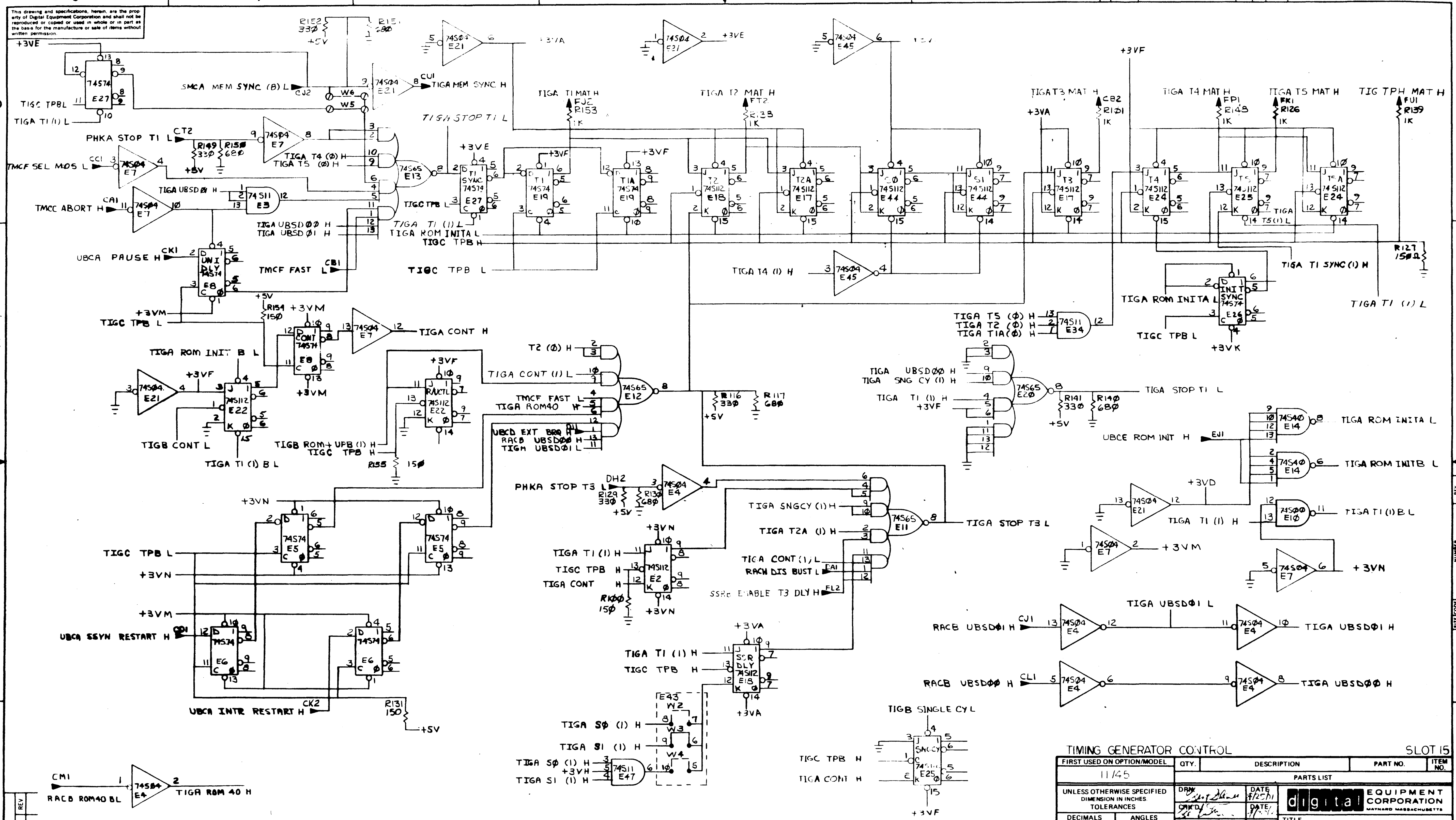
DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS

TITLE: TIMING GENERATOR

SIZE: E | CODE: [illegible] | NUMBER: M8109-0-1 | REV. S

ECO No. m8109-00016 Sheet 4 of 14

This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.




TIMING GENERATOR CONTROL SLOT 15

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| XXX = .005 XX = .02 X = .1 | ±0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL

FINISH

DRN / CHK'D / ENG. / PROD. ENG. / PROD. — DATE

NEXT HIGHER ASSY. B-DD-KB11-C

SCALE

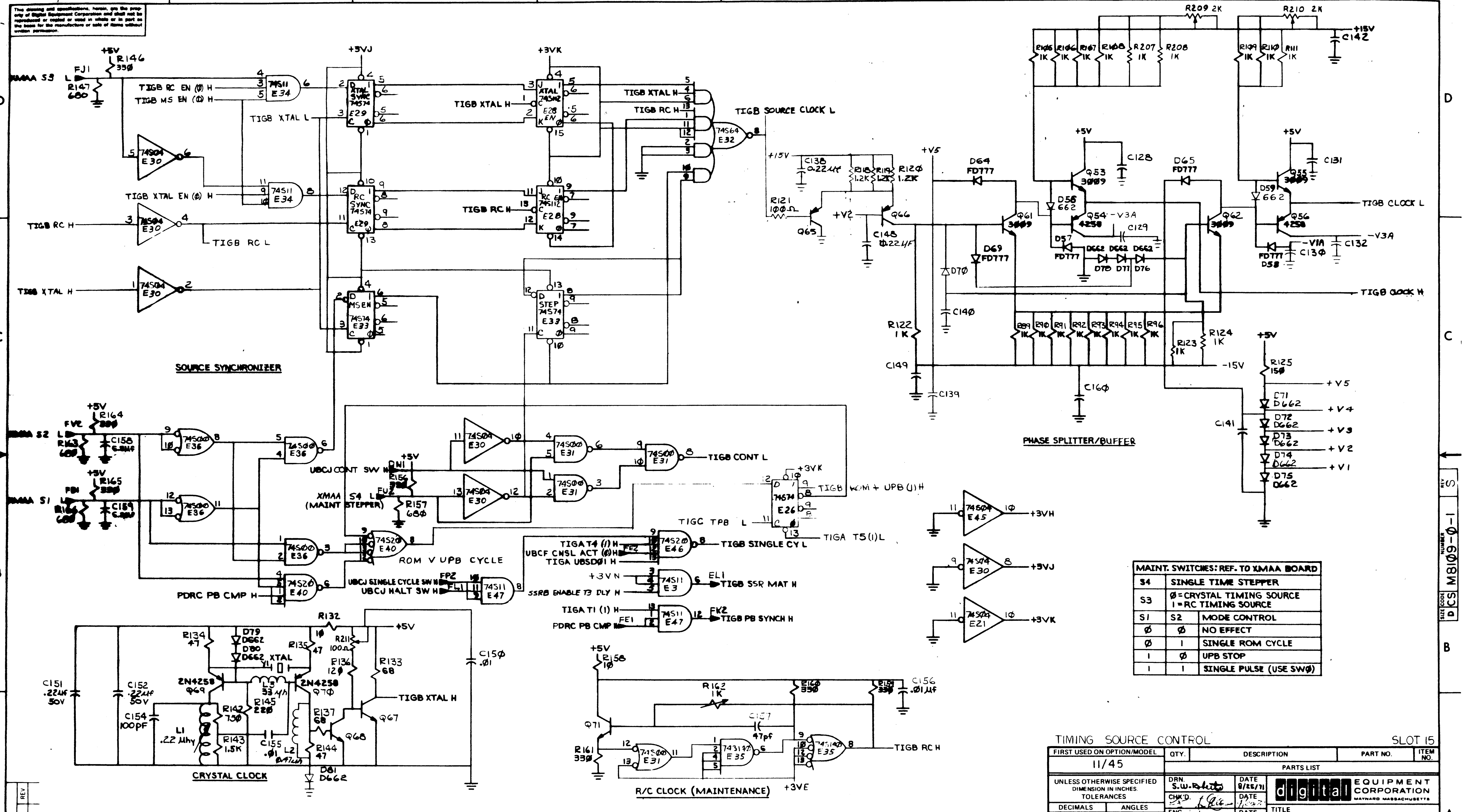
SHEET 2 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE TIMING GENERATOR (TIGA)

SIZE D CODE CS NUMBER M8109-0-1 REV. S

DEC FORM NO DRD 102-8




| MAINT. SWITCHES: REF. TO XMAA BOARD | | |
|---|---|---|
| S4 | SINGLE TIME STEPPER | |
| S3 | Ø = CRYSTAL TIMING SOURCE<br>1 = RC TIMING SOURCE | |
| S1 | S2 | MODE CONTROL |
| Ø | Ø | NO EFFECT |
| Ø | 1 | SINGLE ROM CYCLE |
| 1 | Ø | UPB STOP |
| 1 | 1 | SINGLE PULSE (USE SWØ) |

TIMING SOURCE CONTROL — SLOT 15

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES — DECIMALS: .XXX = .005, .XX = .02, .X = .1; ANGLES: ±0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY

DRN. S.W. Roberts — DATE 8/25/71

NEXT HIGHER ASSY. B-DD-KB11-Ø

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TIMING GENERATOR (TIGB)

SIZE D — CODE CS — NUMBER M81Ø9-Ø-1 — REV S

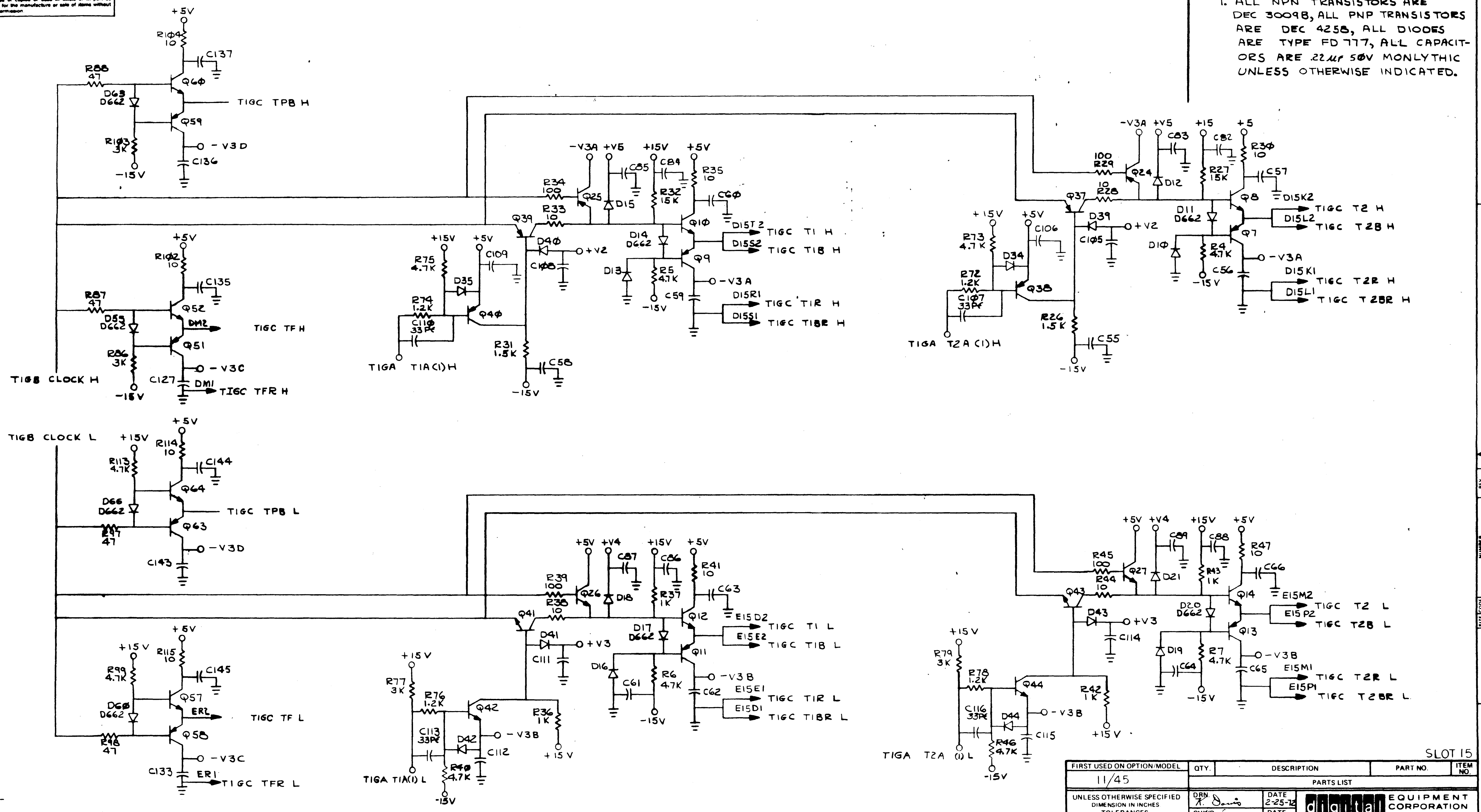
SHEET 3 OF 6

ECO No. M8109-00016 Sheet 5 of 14

DEC FORM NO DRD 102-B

1-Ø-6018W CS a ECO No. M8109-00016 Sheet 6 of 14

NOTES:
1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258, ALL DIODES ARE TYPE FD 777, ALL CAPACITORS ARE .22 uF 50V MONLYTHIC UNLESS OTHERWISE INDICATED.




This drawing and specifications, herein, are the property of Digital Equipment Corporation and shall not be reproduced or copied or used in whole or in part as the basis for the manufacture or sale of items without written permission.

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES
DECIMALS XXX ±.005 XX ±.02 X ±.1 — ANGLES ±0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓
MATERIAL — FINISH —

DRN R. Davis DATE 2-25-72
CHK'D DATE
ENG DATE 4/2/72
PROJ ENG. DATE 4-20-72
PROD. DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

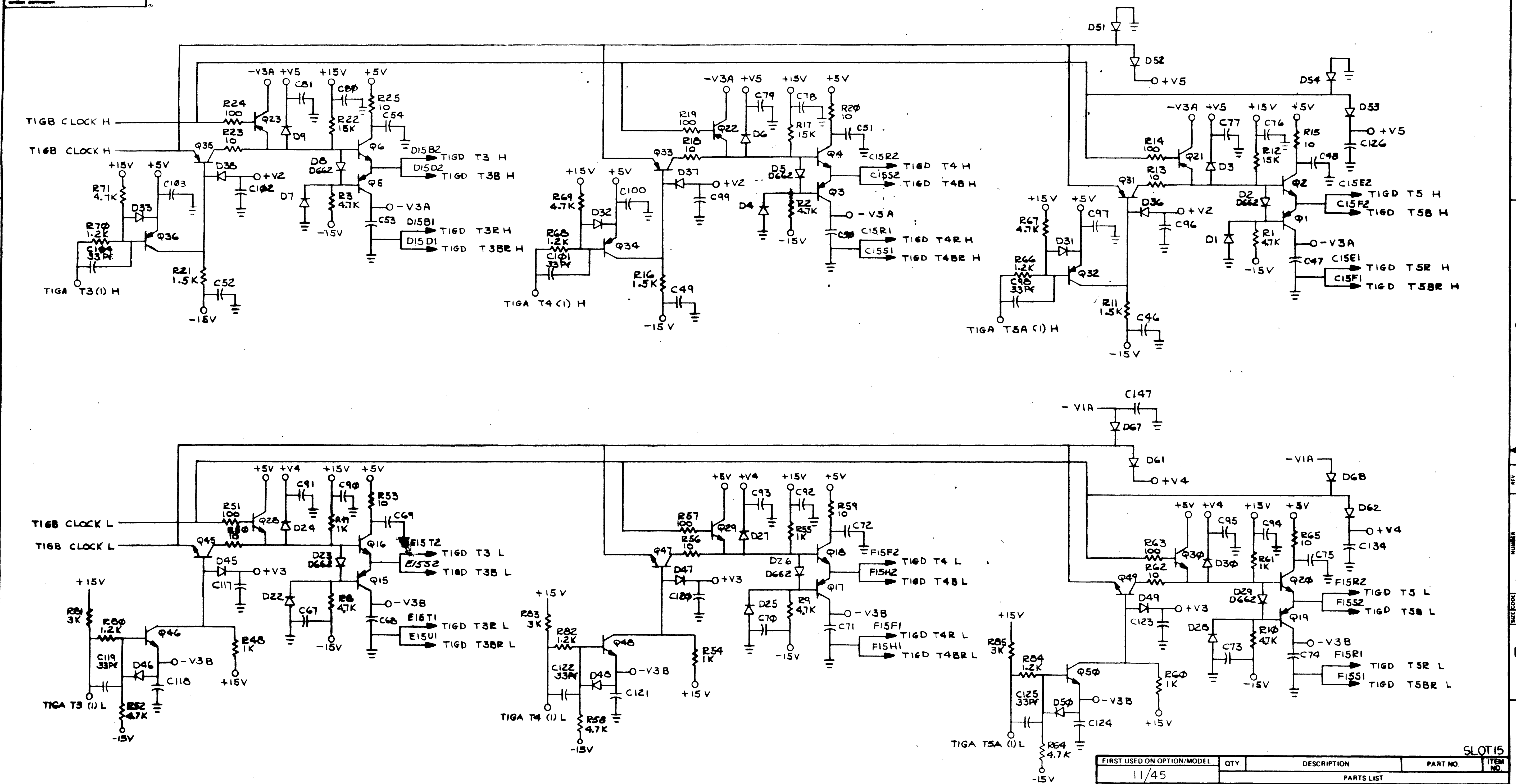
TITLE TIMING GENERATOR (TIGC)

NEXT HIGHER ASSY. E DD-KB11-Ø
SCALE — SHEET 4 OF 6
SIZE D CODE CS NUMBER M81Ø9-Ø-1 REV. S

DEC FORM NO DRD 109-8

ECO No. MF109-00016 Sheet 2 of 4

D CS M8109-0-1 S




NOTE:
1. ALL NPN TRANSISTORS ARE DEC 3009B, ALL PNP TRANSISTORS ARE DEC 4258, ALL DIODES ARE TYPE FD777 ALL CAPACITORS ARE .22 µF MONOLYTHIC UNLESS OTHERWISE INDICATED.

| FIRST USED ON OPTION/MODEL | QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|---|
| 11/45 | | PARTS LIST | | |

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

| DECIMALS | ANGLES |
|---|---|
| .XXX ± .005 .XX ± .02 .X ± .1 | ± 0° 30' |

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —— FINISH ——

| | | DATE |
|---|---|---|
| DRN. | R. Davis | 3-1-72 |
| CHK'D. | | 4/20/72 |
| ENG. | | 4/20/72 |
| PROD. ENG. | | 4-20-72 |
| PROD. | | 4-21-72 |

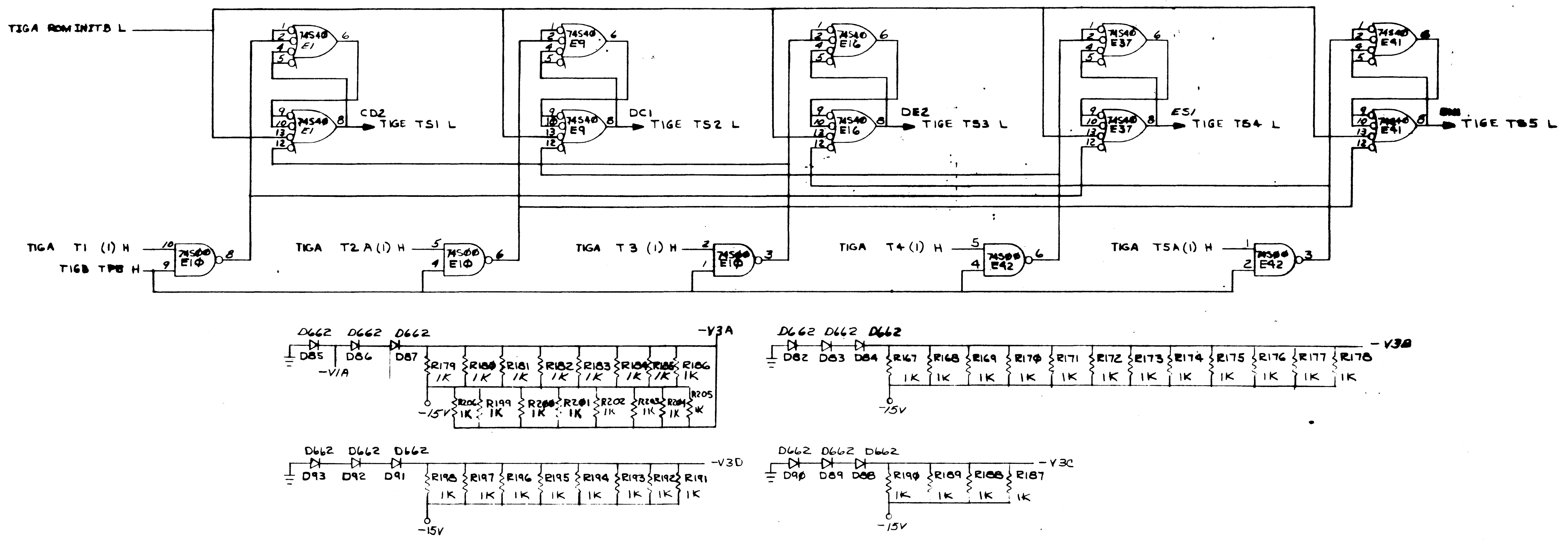
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TIMING GENERATOR (TIGD)

NEXT HIGHER ASSY. 8-DD-KB11-0

| SIZE | CODE | NUMBER | REV. |
|---|---|---|---|
| D | CS | M8109-0-1 | S |

SCALE —— SHEET 5 OF 6 DIST.




TIMING STATE DRIVERS

SLOT 15

FIRST USED ON OPTION/MODEL: 11/45

UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES

DECIMALS: XXX = .005, XX = .02, X = .1 — ANGLES: ± 0° 30'

REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓

MATERIAL —//—

FINISH —//—

| QTY. | DESCRIPTION | PART NO. | ITEM NO. |
|---|---|---|---|
| | PARTS LIST | | |

DRN / DATE 8-25-71; CHK'D / DATE 1/10/72; ENG / DATE 4/20/72; PROJ. ENG. / DATE 4-20-72; PROD. / DATE 4-21-72

NEXT HIGHER ASSY. B-DD-KB11-0

SCALE —//— SHEET 6 OF 6

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: TIMING GENERATOR (TIGE)

SIZE D CODE CS NUMBER M8109-0-1 REV. S

DIST.

S 1-0-6010M SJ ECO No. M8109-00016 Sheet 8 of 14

REVISIONS — REV / CHANGE NO / CHK

DEC FORM NO